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ARMY INFORMATION DIGEST

The Payoff in Training
General Mark W. Clark

Maneuver Enemy

Exercise Harvest

Island Assault

Life Aboard a Submarine

Schooldays in Wiesbaden

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I&E IN THE ARMED FORCES
Weil Committee Report

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THE ARMY INFORMATION DIGEST

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U. S. Army Photograph

GENERAL MARK W. CLARK

CHIEF, ARMY FIELD FORCES

THE PAYOFF IN TRAINING

By

GENERAL MARK W. CLARK
Chief, Army Field Forces

THE most extensive and diversified peacetime maneuver training program in our history is now under way. The last of four successive exercises—each differing in locale, concept and participating forces—will come to conclusion at Fort Bragg next May. Not since the hectic wartime days have the Army, the Navy and the Air Force conducted a series of field training exercises so varied in nature and sweeping in scope.

In point of numbers involved, these exercises, to be sure, are dwarfed beside the lusty giants of Louisiana and the Carolinas conducted in the early forties. Then opposing forces were numbered in the hundreds of thousands. Now in the largest single domestic exercise since the war, scarcely more than eighty thousand troops are involved. But the same principles apply; in fact they are greatly extended in the current program.

As a member of the Army Ground Forces staff I supervised the execution of the Louisiana maneuvers in 1941. Later as commander of the II Corps and the Fifth Army in World War II, I saw many of these maneuver-trained troops in action for the first time. On the battlefields of Europe and Africa—and in the steaming jungles of the Pacific as well—our maneuver training paid big dividends in tactical competence and harmonious working relations. It was our postgraduate training. It gave us the largest, best-trained Army we ever had.

War games occupy a distinct niche in our overall training pattern. The normal training cycle carries a new recruit successively through the stages of basic training, small unit training, combined unit training and finally field exercises. The training process culminates logically in large-scale maneuvers involving joint task forces organized into friendly and enemy (Aggressor) forces.

The late Lieutenant General Lesley J. McNair, then Commanding General, Army Ground Forces, in a memorandum to the former Chief of Staff, General George C. Marshall, listed "large-scale maneuvers of the combined arms" as the final step in the training cycle. "These steps," he declared, "are the foundation of military efficiency." General McNair's view applies with even greater emphasis today.

Certain striking features designed to strengthen still further the earlier concepts of maneuver training have been introduced in the current program. Each maneuver is carried out on a joint basis, involving two or all three of the armed services. A single maneuver commander is designated from one of the armed services and is provided with a joint staff. Participating troops are organized on a unified basis into an Aggressor Force and a friendly force. Enemy representation in the form of the Aggressor Force is active and realistic; in fact it is now a standard part of our larger field exercises. Finally, the entire program encompasses a variety of specialized operations—amphibious, triphibious and airborne—ranging through climates from tropical to arctic and employing diversified modes of combat, each with specific objectives in harmony with the overall pattern of readiness training for national defense.

Exercise Miki, concluded in October 1949, was the largest joint Army-Navy amphibious exercise since World War II. More than fifty thousand troops participated in the final phase, featuring an assault against the Aggressor-held island of Oahu.

Combined United States-Canadian forces are now engaged with the Aggressor enemy in the bitter cold of the Arctic region, further testing the adequacy of our doctrine for cold weather operations. The problems of movement and supply of troops over extended lines of communication will be given intensive study. Air Force troop carrier units will support an airborne battalion combat team in an air drop, indicative of the trend in arctic warfare.

Meanwhile on our Eastern shores the Army, Navy and Air Force will team together in Exercise Portrex. Under Admiral W. H. P. Blandy, an invasion task force which has undergone extensive preliminary training will test our defenses in the Caribbean area. Eighty thousand Army, Navy and Air Force personnel will participate in the exercise, climaxed with a land, sea and air assault on Vieques Island, off the eastern tip of Puerto Rico.

The finale of the fiscal 1950 series will feature the largest

postwar airborne training exercise. Similar in many ways to the North Carolina maneuvers last year, Tarheel II pits the forces of the 11th Airborne Division from Camp Campbell against the 82d Airborne Division at Fort Bragg. Troop carrier, attack, and reconnaissance aircraft units of the Air Force will support the exercise.

This is the order of advanced field training today—fast-moving and diversified, joining together all the components of the battle team. It is training geared to the requirements of modern warfare in an ever-changing world situation. As Chief of the Army Field Forces I am responsible for planning these exercises jointly with my counterparts in the Navy and the Air Force. I have the further responsibility for directing the preparation and conduct of Army participating elements. I assure you this type of exercise commands high priority in our training effort today.

There is no slide-rule formula for measuring what these exercises give us in terms of national security. Their worth can be realized only by an understanding of their purpose, a knowledge of what they meant to us in World War II and a clear conception of what we hope to gain from them in the future.

A fighting force might be likened to a huge machine, composed of numerous sub-assemblies which must be joined and put to test as a single unit. The flaws of the assemblies and, indeed, the engineering worth of the entire mechanism will be revealed only when it is operated as a unit. Maneuvers are the proving ground of training.

There are many features of maneuver training that can be obtained by no other means. Realism of training, the introduction of non-combatant functions, the test of our combat doctrine and the development of new doctrine—in varying degrees each large-scale exercise offers all of these. In addition each provides opportunities for testing our equipment, our defenses and the results of our previous training.

As far as possible we try to achieve the realism of battle without the danger and destruction of the battlefield. Realism of maneuver training expresses itself in the rigors of living in the field, the competitive element of the war game and the immediate tactical situation. Large-scale troop representation brings into play all types of units and all of the specialized and auxiliary functions common to a modern fighting force.

Even though limited in the number of troops employed,

maneuvers provide an opportunity for commanders of larger units to exercise command in combat situations involving decisions of employment. Here staff officers have a chance to carry out their functions under conditions closely resembling actual combat. Here, too, our leaders and staff officers are kept abreast of the latest changes in combat doctrine. Maneuvers put to the test the theories and principles previously learned in our service schools.

One of the paradoxes of modern armies is that new weapons, techniques and procedures tend to complicate rather than simplify the training problems. As the degree of specialization increases, the greater becomes the difficulty of working together as a unit. Paramount among the missions of each arm and service in the Army is the necessity of working and fighting closely with other arms and services. The value of our supporting services—Ordnance, Quartermaster, Signal, Medical, Chemical, Engineer and Transportation—is measured by the degree to which their technical proficiency can be applied to the support of the combat effort. Large-scale maneuvers afford the only means of getting units together in a functioning battle team.

Logistics, which has been aptly described as "everything not covered in tactics and strategy," can be brought into play to a remarkable degree in these field exercises. Too often in our pre-war and early wartime exercises the provision of supplies, replacements and evacuation of the wounded was neglected. As a result of our wartime experiences we are now concentrating on logistical functions in all exercises. In the same manner, we are now bringing into play in all exercises such functions as psychological warfare, military government and troop information and education.

Today certain fundamentals govern the planning of all large-scale field exercises. It is essential that each step, from the very outset, be thoroughly coordinated with the Navy and Air Force. Modern warfare depends upon complete integration of effort to achieve cohesion and unity of action. World War II demonstrated that joint action is the key to military success—a fact that will be even more evident in any future war. To achieve joint action in wartime we must have it in our peacetime training.

Plans for each exercise—and for the overall program schedule as well—must be projected well into the future. Exercise Miki, for example, was conceived two years before its scheduled

date. At present we are planning the exercises to be held three years from now. This gives us time to budget funds and to build the necessary logistical support. Advance planning gives us time to make adjustments necessary to fit maneuver training into the overall schedule. It also permits thorough planning in conjunction with our sister services. Finally, it gives us time to organize and train the umpire group whose work is so vital to the success of the maneuver.

Equally important, our troops generally need extensive preparatory training prior to every large-scale maneuver. This is especially true of specialized operations such as those under amphibious conditions or in extreme cold. Preparatory training began at Camp Hale, Colorado, last July. There, troops who had never experienced the extreme cold and mountainous conditions of the maneuver area were systematically indoctrinated in cold weather warfare. Months in advance of the Portrex maneuver, the Navy gave preliminary amphibious training to all participating Army troops. Even in training for non-specialized warfare, field exercises prepare the troops for the hardships not experienced in the more sheltered garrison training.

Today, in an era in which time and space are shortened, our frontiers are fraught with new dangers. Our plans frankly recognize these dangers. Nearly every large-scale exercise involves some type of operation specialized as to climate, terrain or mode of combat. For Fiscal Year 1951 two exercises are planned in the Arctic region. In the same period we have scheduled seven other large exercises including a mountain exercise, a jungle exercise and a desert exercise. These plans are realistic, geared to changing tactical concepts and trends in world power relations.

At the same time, if we are to exploit our air power potential we must continually develop and put to test our doctrine of air-ground operations. To this end, great emphasis will be placed on exercises involving attack aviation in close support of ground forces and on the airlift of ground forces by troop transports.

Constant effort is being made to impart the advantages of maneuver training to the reserve components, upon which we will rely so heavily in any future war. Officers of the Organized Reserve Corps are assigned to positions with tactical units of the Regular Army or are utilized as umpires with such units at every opportunity. It is hoped that complete units of the

National Guard may be used in Tarheel II. Units and individuals of the reserve components will participate in all future field exercises on a greater scale than ever before.

The great Army, Navy and Air Force that brought us victory in 1945 have long since been demobilized. Though there are many seasoned wartime officers in our much smaller peacetime Army, their numbers grow less year by year. Increasingly, as new leaders rise to the highest levels of command and staff duty, these men—officers and noncommissioned officers alike—must receive the benefits of maneuver training.

For as our wartime experience fades into the past, maneuver training takes on added significance. Time brings new tactics, new weapons, new strategy which must be mastered by new personnel. There is a vital and continuing need for an accentuated maneuver program. In it lies the only answer to the vital question "Is the Army fit to fight?"

AID

A Special Section on Postwar Training

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The preceding article by General Clark and the one following on "The Maneuver Enemy" present some of the basic doctrine underlying postwar training concepts that are intended to make field exercises more comprehensive and realistic. Reprints of these articles are available on request to the Editor.

"A Test of Teamwork" (page 18) describes the application of these principles in the recent Army-Navy-Air Force maneuver in the United States Zone of Germany. "Island Assault" (page 28) traces a joint amphibious action from its inception to its realistic fulfillment in a seaborne invasion of the Hawaiian Islands.

THE MANEUVER ENEMY

By

COLONEL HARRY HENRY

ON KING Street in Honolulu not too long ago, an elderly woman angrily eyed a tall, rifle-carrying soldier dressed in a colorful green uniform and mottled, high-comb helmet. "Why don't you mean people leave us alone?" she chided. "Why don't you leave our island and go back to your own country?" Her outburst was an emotional response to the wartime-type radio broadcasts then being beamed over the island network. To her, this soldier was more than a mock opponent on maneuver. He personified the hostile invader. He was an Aggressor.

Before this time, he and many like him had countered with measurable success the air drop of the 82d at Fort Bragg, the amphibious invasion of Vieques by the 2d Marine Division, the assault of the 2d Armored Division in Florida and the engagement with the 2d Infantry Division in California. Now with elements of the XIX Aggressor Corps he was preparing the Waianae beaches to oppose the 2d Infantry Division again.

Soon his forces would appear in still other sectors. After seizing Alaska, they would be deployed astride the Alcan Highway, awaiting the northward thrust of United States troops; then to Vieques to obstruct more beaches, to train more United States troops, to represent again the Army's outstanding development in peacetime maneuvers—Aggressor, the maneuver enemy which provides troops with a live training aid.

Aggressor has been a distinctive feature in the principal maneuvers of the past three years. Earlier the "blues" and the "reds"—wearing the same uniforms as regular Army troops, using the same tactics, weapons, language and order of battle—constituted the maneuver enemy. As such, they provided only a meager opportunity for intelligence training.

Designed to bring combat conditions to the maneuver area,

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U. S. Army Photograph

High-comb helmets distinguish the silhouetted soldiers as Aggressors.

to emphasize intelligence training, and to portray the difference between United States troops and their future enemies—the Aggressor concept was developed, tested and adopted. The element of sameness was now changed to a difference. A distinctly foreign-looking uniform was obtained by dyeing worn, off-color and obsolete Class X apparel. The basic Aggressor uniform of shirt and trousers, identical for both officers and enlisted men, was varied by a combination of stripes, insignia and cap or ridged helmet. In his forest green uniform, Aggressor left no doubt as to his identity.

Making him ethnologically different from United States forces and at the same time similar to past or future enemies, the Aggressor was given a homeland. The hypothetical nation —the Aggressor Republic—was spawned by the chaotic conditions existing in Western Europe after World War II. When the surrender of Germany was followed by wholesale Allied withdrawals, a small group of determined men—making clever use of propaganda, slogans and minority groups—established a pseudo-republic that was actually a totalitarian state. This new nation infiltrated neighboring states and consolidated its position until currently its boundaries include Northern Spain, Southern France, Northern Italy, Spanish Morocco and the Tyrol region. The Aggressor language which evolved is pre-

dominantly Spanish but includes many words derived from the French, German and Italian languages. This fictitious Aggressor nation—developed historically, politically, economically and sociologically as a totalitarian nation-state eager for conquest and expansion—poses a constant threat to the security of the United States.

In composition, size, number of weapons and vehicles, and in many cases even in types of units, the Aggressor army differs from the United States Army. The Aggressor High Army Command is unified and subordinated to the triumvirate head of the government. Currently at its disposal are 122 divisions organized into two army groups. A third group is responsible for conscription and for the training of a people's militia. There are eight large field armies identified within the two combat army groups. Each field army has eleven corps, either infantry, airborne, artillery or mechanized. The infantry-type divisions are either standard, motorized or elite (fusilier), with the latter type composed of hand-picked personnel on the order of the wartime German SS corps. Aggressor armored-type divisions are either mechanized or armored, with the mechanized type having twice the fire power and personnel of the armored type. Other types are the airborne, cavalry and

U. S. Army Photograph

The triagon, a green triangle on a white circle, is the characteristic Aggressor marking.

artillery divisions, with the latter type constituting one of the most important differences in the Aggressor order of battle. Although the United States Army has no counterpart for the artillery division, this type unit currently exists in at least one of the foreign armies.

In his tactics, Aggressor stresses boldness and decisive action. Ruses and deception are used extensively. The offensive is stressed throughout, retrograde movements being employed only when the offensive cannot be maintained. In general, the offensive takes the form of a combination of simultaneous attacks on a broad front reinforced by a concentration of artillery and tanks in predetermined sectors. The Aggressor seeks to penetrate the defense in two or more sectors to permit convergence on a limited objective. He then seeks to envelop and destroy or bypass the enemy. In defense, Aggressor is versatile and active, making extensive use of controlled and unmarked minefields.

Both in attack and defense, Aggressor uses many automatic weapons. A light machine gun is organic in each squad. Close-in fire support is obtained principally from the distinctly foreign 120mm mortar in the parent infantry unit and in supporting mortar battalions, regiments or brigades.

Aggressor's breakthrough and counterattack punch is vested in the armored regiment of the infantry division reinforced by inorganic armor, well camouflaged and concentrated and under centralized control. His general support fire, self-propelled units, antiaircraft and antitank defense functions are generally the responsibility of the artillery division.

To overcome the deficiencies of pre-war simulated battle situations—in which flags were used to represent everything from weapons to gassed areas—the Aggressor technique was developed to provide a more realistic portrayal of combat conditions. Life-size pneumatic models, battlefield noise projections and fire markings are integral to the Aggressor concept. Not only must a gun look like a gun, shoot like a gun and emit the sound, flash, smoke and whine of the projectile overhead and its explosion over or in the target area, but soldiers subject to such fire must also feel, hear and respond to it.

Aggressor uses life-size pneumatic artillery, tanks and vehicles—rubber facsimiles that are easily inflated and moved. During maneuvers Aggressor artillerymen digging emplacements for their inflatable weapons create the same tell-tale indications that, in actual combat, could reveal their positions

to an alert aerial observer or photo interpreter. In this way training takes on a realistic hue.

To subject the enemy to small arms fire as heard and sensed from the receiving end, Aggressor employs high-fidelity, jeep-mounted sound-producing devices. Aggressor infantry battalion commanders bring these into play to develop the tempo of the battle, augmenting the front-line fire of pneumatic weapons equipped with blank-firing attachments. The Aggressor small sonic unit carries a 10,000-foot magazine of wire-recorded small arms battle noises—single shot, ricochet and machine gun fire or a combination of the three. Using both recorded small arms fire and actual detonations, the Aggressor commander can develop the desired amount of fire power.

Aggressor's specially developed artillery flash and sound device electrically fires a frangible, plastic pyrotechnic to produce the sound, flash and smoke characteristic of artillery. A single operator can fire from one to ten rounds in as many seconds. Pneumatic artillery thus equipped provides realistic training to United States aerial and ground observers and counterbattery personnel.

Flash and sound devices simulate the first stages of artillery fire. Once the projectile has figuratively left the pneu-

U. S. Army Photograph

Life-size inflatable models of artillery, tanks and vehicles are used to augment standard equipment in maneuver training.

matic artillery, a large sonic unit takes over, projecting the whine and roar of the approaching round and its explosion in the target area. To complete the effect and to delimit the target area with actual explosions, a fire-marking team under umpire control moves to the target area to mark the fall of each round with actual explosions. Air bursts are marked with rounds fired from pyrotechnic pistols. Ground bursts are marked with detonations of the commercial-type hand grenade. The result is startlingly effective and authentic.

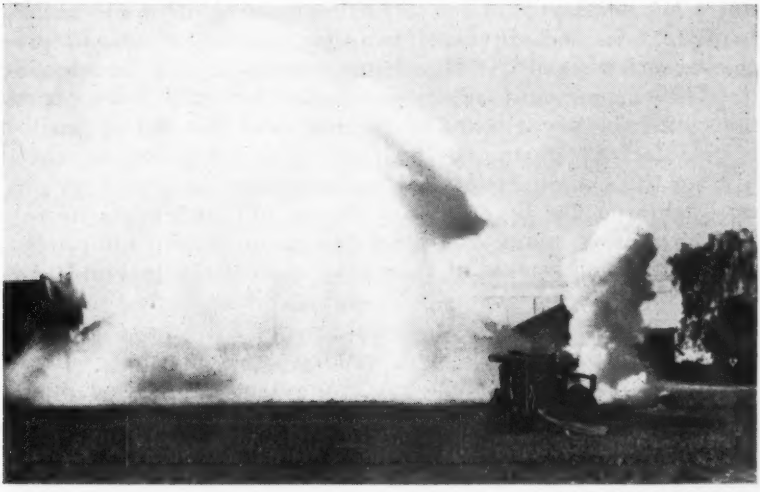
Psychological warfare—often as effective as a firing weapon —is used with effect against United States troops. But since the ever-present fear-of-death theme cannot be exploited in peacetime, Aggressor relies on other appeals—such as the physical discomforts, the shortage of rations, the danger from snakes, and the like. Radio, leaflets and combat loud speakers are widely used. The radio is used principally to intercept and confuse, by disseminating false information and orders ostensibly from United States commanders. Leaflets may present a demoralizing picture of an untenable position, a method of securing passage to Aggressor rest camps, or the good treatment accorded captured United States soldiers. The direct appeal of the combat loud speaker is generally used on targets of opportunity. Amplifiers blare out the hopelessness of the situation and assure all comers that "Aggressor treats prisoners right."

All of these special purpose devices, along with the trained personnel for their maintenance and operation, are centered in the Aggressor Headquarters and cadre units at The Ground General School, Fort Riley. (See "Ground General School Training," June 1949 DIGEST.) Months before the play of a maneuver begins, representatives from the Aggressor GHQ visits the Maneuver Director Headquarters to prepare the who-does-what-to-whom scenario. Aggressor staff officers brief selected intelligence personnel in their role as Aggressor agents. These agents are trained to spread psychological warfare leaflets, to gain valuable intelligence information and to perform sabotage. The Aggressor agent who leaves behind a leaflet proclaiming "Aggressor Was Here" not only highlights any security breaches by United States Forces but in so doing he also receives valuable training in his wartime mission. The United States Force receives intelligence messages ostensibly prepared by United States agents operating under cover in areas occupied by the Aggressor. If evaluated correctly, this

information will provide a picture of Aggressor strength, disposition and designs such as would normally be obtained by an intelligence-active headquarters in wartime.

Heightening the play of intelligence and counterintelligence, both United States and Aggressor front-line soldiers are informed at the outset that the responsibility for the procurement of intelligence items rests with them—that their awareness will determine to a large extent the soundness of the decisions made by their unit commanders. To immunize him against the lures and blandishments of psychological warfare, the United States soldier is trained to realize that his gullibility is a reflection on his native intelligence, his discipline and training, and his belief in the cause for which he fights.

About two months before D-day the nucleus of the maneuver force—comprising the Aggressor GHQ and supporting cadre units—moves to the maneuver area. Here contact is made with units of the United States Force which are to be converted to Aggressor. In their new role, the selected United States troops shed their identity and acquire the Aggressor order of battle status. Orientation sessions and demonstrations by the Aggressor cadre unit enable this newly formed organization to absorb the Aggressor concept, tactics and techniques. All receive orientation in the methods of maneuver control. Se-



U. S. Army Photograph

Sound, flash and smoke is produced by a pyrotechnic device used in close proximity to the pneumatic artillery.

U. S. Army Photograph

This small sonic unit produces realistic battle noises by wire recording.

lected personnel are trained to operate flash simulators, sonic units and pneumatic equipment. Others are trained as "prepared prisoners"—trained to tell a carefully prepared story when captured, but only when correct interrogation procedures are employed. Each is further trained to report on the United States techniques of handling, interrogating and processing prisoners. The Aggressor order of battle detachment assists the new unit in its reorganization and attempts to determine the strength and identification of the enemy (United States) forces. During the final phase, this detachment moves over to the United States side to determine the degree of success achieved by the opposing order of battle detachment. The Aggressor photo interpretation team meanwhile determines the effectiveness of Aggressor camouflage measures, interprets photos of enemy-held areas and evaluates the proficiency of its United States counterpart. All other Aggressor effort is concentrated on the training of a maneuver enemy which will test the combat effectiveness of the United States Force.

Preliminary to the actual operation, a series of command post exercises are held. There is a walk-through rehearsal to acquaint all personnel with the proposed plan of movement, followed by a final dress rehearsal complete with firing, sonic

projection, fire marking, the interrogation of prepared prisoners and exercises to test the reporting of intelligence data. After this preparation, all troops and commands become tactical and remain in the field until the maneuver is complete.

The umpire group controls the play of the maneuver. Early in the planning phase an umpire group is organized to train personnel as umpires and fire markers. Since the Aggressor is not being tested, umpires are assigned only to the United States Force, generally on a basis of one umpire to each infantry platoon, company and battalion. The umpire group directs and controls the unit umpires through a telephone and radio net. Its liaison group serves as a coordinating agency, providing a pool from which additional umpires may be drawn to cover special situations.

Throughout the play, the umpire has the same mission as his baseball counterpart. Although he starts the game, he does not tell the player when he can steal a base, hit a home run or run home. And while the maneuver umpire sets the conditions, it is not his role to rob the tactical commander of an opportunity to make a decision so long as the maneuver is progressing in conformity with the established rules. The umpire remains in a tactical position so as not to reveal the presence of the unit. He has charge of representing hostile fire either as ground or air bursts. He creates local situations requiring a decision or plan from the unit commander. He assesses casualties and reports on training deficiencies. When necessary, he represents the next higher headquarters. In short, he facilitates the maneuver's progress in the direction of realism, practicality and training for the troops involved.

For umpire and field soldier alike, the Aggressor technique adds an indispensable element of realism to maneuvers. No longer need a unit be stopped by a flag signifying theoretical artillery fire. With Aggressor units furnishing the opposition, United States troops on maneuvers are confronted with a physical challenge to their nerve and stamina. The flash and roar of enemy fire realistically marked with actual explosions is more than a training aid; it engenders those attributes of confidence and coolness under fire that may well be the catalysts of victory in any future real-life battle.

Various phases of the Aggressor concept are covered in Field Manuals 30-101, 30-102, 30-103 and 30-104. Commanders desiring additional information on the Aggressor should address the Commandant, The Ground General School, Fort Riley, Kansas; Attention: The Aggressor GHQ.

Exercise Harvest:

A TEST OF TEAMWORK

By

COLONEL SAMUEL GLENN CONLEY

CAPABILITIES of United States Occupation Forces in Germany to withstand aggression were tested recently—with highly encouraging results. Personnel of the Army, Air Force and Navy pooled their efforts to prove to any would-be aggressor that United States Occupation Forces are geared for lightning retaliation in defense of Western Europe.

For ten days in September 1949, the combined services conducted Exercise Harvest—a realistic, two-sided, free-play maneuver that constituted the largest training exercise ever carried out by United States units in Europe. Four months of extensive planning preceded the exercise. The maneuver grounds extended over 30,000 square miles of the United States Zone of Germany. Combat-like operations ranged all the way from the Rhine river on the west to the border of Czechoslovakia; in the south from the Danube in Middle Bavaria up to the Taunus mountains in Hesse.

Controlling the exercise—and in certain respects the chief proving ground of the test—was the Joint Command Maneuver Headquarters at Furth, near Nuremberg. Here Army, Air Force and Navy commanders set up an integrated command and staff to test and perfect unified combat action of all United States defense forces in the European Command.

Through the joint headquarters staff, the three services worked as one—completely integrated. A decision made by a senior commander—Air, Army or Navy—was implemented through the joint staff and was sent to the service commanders concerned as a joint decision. Air strikes, for example, were requested by commanders of all services and were handled through a joint operation center at the air division. Like-

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wise, a Rhine river naval operation was not just a Navy affair but action taken through a joint decision.

Employment of a unified command, while new to postwar U. S. Forces in Europe, was in keeping with Department of Defense policies. As in any project tried for the first time, certain strengths and weaknesses became apparent. The Joint Command and staff pooled its resources to take advantage of the strong points and to eliminate weaknesses. All services on all levels worked together as a team to accomplish the common mission.

Taking part were all available units and installations that might be used in event of actual hostilities. These ranged from the port facilities at Bremerhaven to B-50 groups training in England; from Military Government detachments in Bavaria to Quartermaster bakery units in Hesse; from a French battalion coming from the French Zone to a battalion of United States infantry shuttled 600 miles overland from Trieste. And, of course, there were the two combat units upon which EUCOM's early ground defense must depend initially should war strike—the United States 1st Infantry Division and the U.S. Constabulary. To this array were added the fighters and bombers of the United States Air Forces in Europe (USAFE) and the LSTs manned by personnel of the Navy's Rhine River Command. All, according to their own specialties, fitted into the team.

Exercise Harvest was conceived as the culminating action of a series of assaults by a mythical Aggressor invasion force which had furnished the opposition in Exercise Showers last Spring. The theoretical situation evolving from Operation Showers found U.S. Forces deployed on a mythical front along a 100-mile line extending almost due south from Coburg, near the Russian Zone border, to Kelheim on the Danube river. In July an Aggressor attack had broken this line, surrounded elements of the U.S. Forces in the Neustadt-Forcheim-Nuremberg area and pushed the 1st Division south of the Danube river. From that date both sides had dug in, brought up replacements and reserve supplies and had prepared for further action.

In Exercise Harvest, the U.S. Constabulary assumed the role and position of Aggressor Army Forces as the XXI Corps, Third Aggressor Army. Moving out from initial positions at daybreak on 6 September, a part of the Aggressor Force with an armored division supported by fighter bombers

sprang from the Fulda area, then crossed the Main river on an intact bridge at Hanau, and fanned out in three columns in an attempt to destroy communications in the Frankfurt-Wiesbaden area. Consisting of considerable armor and possessing mobility protected by superior air power, the Aggressor met the defending U.S. Forces head-on.

U.S. Forces were made up of the 1st Infantry Division, the 2d Battalion of the 351st Infantry Regiment from Trieste and the French 5th Battalion, *Chasseurs a Pied.* In addition to these actual forces, the 50th Armored Division (a mythical unit training in England when the exercise opened) and partisans, represented by umpires, rounded out the "friendly" forces.

With the phasing out of the Berlin Airlift, practically all aircraft in Europe were available to the Joint Command for use in Exercise Harvest. Air Force units were to be rotated between opposing elements at various stages of the operation in order to give each side training in the employment of men and materiel, both with and without air superiority.

Air strength of Aggressor Force centered in the 36th and 86th Fighter Wings. On the opening day, the jets and F-47s, as well as bomber-reconnaissance planes, had the skies to themselves as Aggressor planes hammered the U.S. Forces mercilessly at every opportunity.

Taking advantage of surprise, Aggressor seized a bridge at Hanau. The U.S. Forces, consisting of the 18th Regimental Combat Team and the Rhine River Patrol, concentrated on defending the communication facilities in the Frankfurt-Wiesbaden area, including the Rhine-Main Air Force Base. Aggressor Forces reached the Rhine river above Mainz and damaged shipping and ferries on the river. Aggressor then staged an orderly withdrawal.

The air picture changed sharply on the second day when an actual flight of B-50 bombers, based in England, made a high-altitude attack on the 86th FW base at Kitzingen, southeast of Würzburg, and destroyed a number of fighters on the ground. As a result of this surprise attack, the umpires ruled the Kitzingen unit out of the operation for 72 hours.

Behind combat engineers sweeping roads for mines and removing obstacles left by the retiring "enemy," the 1st Division 18th RCT succeeded in retaking the Hanau bridge used the day previously by the attacking Aggressor Force. U.S. Forces units in pursuit of the Aggressors were ordered

to halt their counterattack and regroup in preparation for continuation of the action.

During this Main and Rhine rivers phase, Army, Air Force and Navy units were involved in seething action in the same general area. Naval forces from the Rhine River Command transported 1st Division troops and tanks in an effort to stem the Aggressor advance and protect water communications. Aggressor planes bombed Rhine-Main and Wiesbaden Air Force Bases.

The maneuver plan required the Aggressor Force to withdraw from the Frankfurt-Fulda area and move to reinforce the remainder of the XXI Corps which was starting to launch an offensive across the Danube river in the vicinity of Ingol-

AREA OF EXERCISE HARVEST

Principal points of operation—Northern Bavaria and Hesse.

stadt. Aggressor made an assault crossing of the Danube the night of 7-8 September and established a bridgehead south of the river. Amplifiers and smoke pots 20 miles to the east were cleverly used to divert "friendly" troops from the actual crossing site.

By 0800 on 8 September, Aggressor Force was ferrying vehicles and heavy equipment across the Danube at Gross-Mehring under a protective smoke screen. Aggressor engineers expanded the bridgehead with Bailey and floating bridges despite persistent air strikes by U.S. Forces dive-bombing and strafing airplanes. Six hours later major elements of an Aggressor armored division were across the Danube and moving south toward Munich, 40 miles away. U.S. Forces troops were rushed into position. After an eight-mile forced march across rolling Bavarian fields and through thick pine forests, they succeeded in halting the Aggressor advance.

A highlight of the exercise got under way on the 8th when the 18th RCT was airlifted from Rhine-Main AFB to Furstenfeldbruck AFB near Munich. USAFE C-54s and C-47s flew 2380 combat-equipped infantrymen and their jeeps, trailers and mortars the 200 miles, without mishap, to reinforce the U.S. Forces defending Munich.

On the morning of the 9th an Aggressor Combat Command again attacked toward the south in an attempt to break out of the bridgehead. The 16th RCT, the *Chasseurs a Pied,* and the Trieste battalion all were heavily engaged in the defensive action which followed. The attack penetrated 15 miles in depth but Aggressor was beginning to show the effects of its loss of air superiority.

Despite the furious stand made by the Americans and their French comrades, the overwhelming might of Aggressor armor had taken its toll. Umpires on the scene ruled, however, that the U.S. Forces had accomplished the mission of holding the attackers in check long enough to permit the mythical 50th Armored Division to reach the area and throw its power into the support of the embattled U.S. Forces. With this increased armor south of the river threatening to drive them back toward the Czechoslovakian border, Aggressor was forced to alter its plan of action. A 33d Armored Division combat command —Task Force Ryan—which had arrived from the Fulda area, lunged out of the bridgehead, swung east toward Freising and nearly overran the CPs of the 1st Infantry Division and the 2d Air Division. An ensuing counterattack by U.S. Forces with

armored elements spearheading the drive placed the entire Aggressor position in jeopardy. Jet planes of the 36th FW claimed credit for knocking out one-third of Task Force Ryan's tanks, and Aggressor's commander decided to pull back across the Danube. Task Force Ryan, badly mauled after its forays in U.S. Forces territory, was given the assignment of covering the Aggressor withdrawal to the north. Even so, Aggressor's rapidity of action, its successful retirement to new positions and its subsequent reorganization for further defensive operations proved the effectiveness of Aggressor leadership.

On the evening of the 10th, maneuver directors called an armistice until 0700 on the 11th to permit a readjustment of battle positions.

At that hour the battle was resumed in the Danube sector. Air units had a field day. Maneuver headquarters announced that U.S. Forces planes had flown 194 sorties during the day, claiming destruction of 396 vehicles and 12 tanks and damage to 93 additional vehicles. The air strike had been made along miles of the *Autobahn*—in daylight—against congested columns of Aggressor troops on the move toward Grafenwohr. Air Force claims that Aggressor columns had been "annihilated" were upheld by the Maneuver Chief Umpire. Aggressor Force, however, continued in action to prevent upsetting the schedule.

During the night of the 11th-12th, two infantry regiments of

USAF Photo

An RB-26 light bomber simulates an attack on Aggressor tanks and men.

U.S. Forces using assault boats began crossing the Danube in pursuit of Aggressor elements. By the following night these units, pressing close on the heels of Aggressor Force, were advancing rapidly to the north toward Grafenwohr near Vilseck where the Aggressor was expected to dig in for a last-ditch stand. Aggressor troops were routed out of a strong point at Neumarkt, 40 miles due north of their Danube crossing site, while another Aggressor unit was destroying a vital bridge at Feucht, near Nuremberg, in an effort to slow the pursuing infantry and armor. Aggressor F-47s aided the retiring ground troops by flying 135 sorties and destroying 137 U.S. Forces vehicles, 3 trains and 11 tanks while losing 55 of their own planes.

Throughout 14 September, activity centered in sporadic resistance by Aggressor Force and a two-pronged advance by U.S. Forces toward the main defense positions being readied by Aggressor. USAFE flew missions for both sides for the third straight day. By afternoon, U.S. Forces were poised for an all-out assault against the newly entrenched Aggressor XXI Corps—drawn up on a 35-mile defense line extending from Bayreuth southeast to Amberg.

Behind an artillery barrage, U.S. Forces jumped off at 1300 on 15 September. All possible restrictions had been removed by maneuver directors in an effort to make this final phase a free-play action short of actual physical contact.

The 18th and 26th RCTs supported by a battalion of heavy tanks advanced to close in on the determined foe. Aggressor countered by throwing in the weight of the 29th and 53d Armored Regiments. Desperate Aggressor defenders, savagely resisting the victory-inspired U.S. Forces, were finally forced to give ground and the climactic phase of Exercise Harvest came to a close.

Nerve center of the exercise was the war room at the Maneuver Joint Headquarters. Here, in a former *Luftwaffe* aircraft hangar at Furth, the maneuver staff and foreign military observers closely followed the action as it unfolded at the front. A 30x18 foot illuminated map flanked by three large phase maps showed the situation in detail throughout the entire maneuver zone. From the wings, enormous scale maps, statistical charts and other background material were shunted into view on track devices. When the lights were extinguished, luminous colored paint brought out each significant map detail.

Press and radio correspondents, working from a nearby press headquarters, filed thousands of words daily over teletypes

and special telephone circuits. A headquarters telephone loop connected a broadcasting booth with the cable head for live radio broadcasts to the United States. Also available to the press were bulletin boards, daily news releases and the facilities of a jointly staffed Armed Forces information bureau. Representatives of 31 newspaper, magazine, radio and newsreel media—from the United States and five European countries—presented the story of Exercise Harvest to the world.

Months of logistical preparation paid worthwhile dividends. The necessity for feeding hosts of men under simulated wartime conditions presented a major problem, yet three hot meals a day were served to the troops in most instances. Only a small percentage of combat troops in forward areas were required to rely on C and K rations. Quartermaster field bakeries provided fresh bread daily. Ice cream was on the menu, with fresh meats and vegetables being generally available.

With all the resources of the European Command mobilized, it was not uncommon to see the personnel at virtually every unit and station in Germany bivouacked in the forests and fields near their installations, carrying on their normal occupational roles under simulated combat conditions. Even the per-

U. S. Army Photograph

U. S. Forces troops cross the Danube.

sonnel at the Bremerhaven Port of Embarkation turned out for 24-hour duty to handle both actual and simulated cargo needed to support the operations logistically.

Medical units went into the field, leaving only skeleton staffs to carry on the essential facilities at local stations. A total of 364 actual casualties were handled by field medical units during the exercise. Litter planes aided in the rapid evacuation of battlefield wounded to base hospitals.

Special Services functioned on a wartime basis, bringing entertainment to troops in the field, setting up recreational and athletic facilities wherever possible. The American Red Cross furnished emergency assistance to servicemen who required help. Mobile Quartermaster laundries and showers provided clean clothing and bathing facilities. The American Forces Network, operating from mobile broadcasting units in the field, performed a dual role of entertaining the troops as well as conducting psychological warfare on a large scale.

Both U.S. and Aggressor Forces carried on psychological warfare with considerable realism. Aggressor was the more active in this field. Besides distributing newspapers and leaflets in U.S. Forces troop areas, Aggressor agents issued beguiling appeals to U.S. Forces men to surrender. One AFN announcer working for the Aggressor talked himself into a prison camp. Busily broadcasting propaganda in a mobile field unit on the move, the announcer talked on, unmindful of the direction his driver was taking. Soon they were in U.S. Forces territory. Troops of the 1st Division took the announcer, driver and van into captivity.

Thirty-five members of Military Government teams kept in close touch with J-6 Joint Headquarters at Furth. They furnished reports on serious incidents, claims against the Government arising from maneuver damage, displaced persons conditions, and the extent of food reserves among civilian elements. Some of the work was done on a simulated basis; other phases were actually carried out.

A total of 624 umpires using liaison-type airplanes, trucks and radio participated in the joint umpire phase of the maneuver. All had undergone a two-week training course to insure uniformity of findings as well as accuracy in their rulings. Acting in the capacity of unofficial umpires were more than 150 foreign military observers from 14 nations.

Maneuver directors and observers alike agreed that the operation proved the necessity for more effective security measures

by American ground forces against sabotage, as well as against attacks from the air. All echelons were deficient in maintaining security precautions. Disregard for enemy aircraft by ground elements was evident throughout the exercise, pointing up the need for more intensified training in defense against hostile airplanes.

Although communications facilities were found to be adequate, the actual utilization and maintenance of the communications system was found slightly wanting. In many instances umpires flew on air missions to judge air strikes, ground defenses and retaliatory actions, but the umpire system was not entirely satisfactory in providing a complete and final assessment of the fast-moving action in the many areas requiring their decisions.

Despite minor defects uncovered in functioning, cooperation among the services was praiseworthy. According to the official observers, many of the difficulties may be eliminated by placing more emphasis on complete three-service understanding during the planning phase of future problems. To this end, it was recommended that a joint maneuver planning staff on a permanent basis be established in EUCOM.

On the credit side the critique pointed out a number of commendable features. The logistical aspects were found to be excellent throughout. Also singled out for praise were the mobility and aggressiveness of all forces participating, the manner in which mass movements of troops were conducted and the excellence with which tanks and other vehicles were operated and serviced.

Overall, the maneuver illustrated the necessity for American Forces in Europe to shore up the defenses in their respective areas of responsibility. Needed was a rigorous training program to correct the most apparent weaknesses in air-consciousness, communications, security and inter-service problems.

In summing up the results of Exercise Harvest, Lieutenant General C. R. Huebner, Deputy EUCOM Commander-in-Chief and Director of Exercise Harvest, declared: "Today all members of the Joint Staff are better prepared to undertake any future task which the Army, the Navy and the Air Force may be called upon to perform in this area . . . Exercise Harvest was an example of skilled professional planning, supervision and execution . . . The Army, Navy and Air Force in Europe form a first-class professional fighting team of which our Nation can be proud."

Joint Exercise Miki:

ISLAND ASSAULT

By

LIEUTENANT COLONEL RODGER R. BANKSON

COMBAT veterans and young infantrymen fresh from basic training scrambled up wooden towers and down cargo nets into landing craft mock-ups. Operations officers sweated to balance the troop list for a major amphibious invasion. G-4 sections made and remade dunnage estimates, while Navy men spent hours and days tuning their landing craft, circling in rendezvous and finally dashing for the beach—all in practice.

Reminiscent of the years of Pacific warfare, a major effort was being mounted—but with a significant difference. Joint Army-Navy Exercise Miki, the largest amphibious operation since World War II, was designed as a full-dress unified action —one that would test procedures developed in World War II and during four subsequent years of painstaking evaluation and study.

The maneuver was the culmination of plans under study since late 1947. In May 1949, the machinery was set in motion by a joint memorandum from the Army Chief of Staff and the Chief of Naval Operations. Among the objectives set forth, these were paramount: (1) To improve the combat readiness of the 2d Infantry Division and attached troops for joint amphibious operations; (2) To train unit commanders and those in higher echelons in the planning and execution of joint amphibious operations; and (3) To develop recommendations for improved planning and execution of joint amphibious operations and for improved joint staff administrative functioning.

Months of preparation and planning reached a crescendo in October. In a full-scale assault, some 100 ships of the First Task Fleet and more than 50,000 officers and men of the Army, Navy and Marine Corps attempted to wrest the Hawaiian Islands from a mythical Aggressor invader entrenched on Oahu.

Every study, procedure, plan and order leading up to the

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climactic phase was a product of unified action. The Commanding General of the Sixth Army, General Mark W. Clark (later succeeded by Lieutenant General Albert C. Wedemeyer) was Maneuver Commander. A Western Theater of Operations was set up to control the invasion effort. Vice Admiral Gerald F. Bogan, Commander in Chief of the Pacific Fleet, commanded the Western Task Force—an Army-Navy invasion force especially created for the exercise. In this role, Admiral Bogan was in charge of planning for the training and transporting of Army forces commanded by Major General Harry J. Collins and the logistical support forces and combat naval forces under the command of Rear Admiral B. J. Rodgers.

Defending the key island of Oahu was an Aggressor Force under Lieutenant General Henry S. Aurand, Commanding General, U. S. Army, Pacific. This force—with a paper strength of 20,000—actually consisted of 9000 Army troops, drilled in Aggressor tactics by a cadre from the Aggressor headquarters at The Ground General School, and some 3000 Navy and Marine Corps personnel manning ships, submarines and planes of the Navy defense forces.

By mid-June, a staff of about a hundred Army, Navy and Marine Corps officers and enlisted men of all ranks and grades was working full blast at the Maneuver Commander's headquarters at Fort Winfield Scott, the Presidio of San Francisco.

U. S. Army Photograph

Maj. Gen. Walter M. Robertson, Deputy Maneuver Commander, points out highlights of joint exercise plans to Army, Navy and Marine Corps officers.

The original planning by this staff formed the basis for a detailed operation plan and a comprehensive control order, issued by the Maneuver Commander, which blueprinted plans for the establishment of similar joint staffs by both the Western Task Force and Aggressor Force.

The Maneuver Commander's staff was itself an example of the unified action that characterized the exercise. Major General Walter M. Robertson, deputy maneuver commander and actual maneuver commander because of the change in Sixth Army commanders, had a rear admiral as his senior naval adviser and an Army colonel as chief of staff. The chief of staff, in turn, had both Army and Navy deputies. Command of the other staff sections was divided so that the second in command in each instance came from a different service. And so it continued down the line—a balanced mixture of the services that included the enlisted men.

Administrative procedure in such fields as communications, publications, terminology and correspondence consisted of an efficient mixture of Army, Navy and Marine systems. The best of each system was adopted and the least efficient discarded. JANAPS—Joint Army-Navy-Air Force Publications—provided the standard for all communications. The Army checkslip and correspondence systems and the Navy speedletter and staff numbering systems were fitted together.

In preliminary joint training for the maneuver, staff officers of the Army, Navy and Marine Corps were given an amphibious indoctrination course at San Diego by the Amphibious Training Command of the Pacific Fleet, augmented by 30 Army officers and 45 enlisted men. The famed Troop Training Unit, Pacific, of the Marine Corps moved a complete team from Camp Pendleton, California, to Fort Lewis, Washington. There, a sand table covering an entire hangar floor enabled officers and men of the 2d Infantry Division to learn in three hours basic amphibious procedure that might normally have required weeks of individual instruction. The Marines then moved into the field to assist soldiers in dry land training on the Fort Lewis mock-ups and wet-net training in the chilly waters and on the wooded beaches of Puget Sound.

While the 2d Infantry Division was in training, testing its equipment and waterproofing its vehicles, a unified umpire group was set up at Fort Scott under Brigadier General William S. Lawton. This group later conducted a school at Fort Lewis for the 640 officers and enlisted men who were assigned to units

as umpires. Among the umpires were 150 Organized Reserve Corps and National Guard officers on 90-day tours of active duty.

Maneuver staff members shuttled back and forth by plane, threading together the multitudinous details. Finally, in late September, the 38,000-man Western Task Force began to assemble. The 2d Infantry Division's attached troops included, among other units, a portion of the Second Engineer Special Brigade from Fort Worden, Washington; an Air and Naval Gunfire Liaison Company from Camp Lejeune, North Carolina; and a port battalion and truck companies from Oakland and Camp Stoneman in California. The invasion force boarded transports at Olympia, Washington, and headed south for San Diego. Early in October the Western Task Force sallied out of Coronado Roads for a naval surface and aerial fire-support demonstration on bleak and uninhabited San Clemente Island. The next day a portion of the Army force stormed ashore on the sandy beach at Aliso Canyon in rehearsal for the action ahead.

After returning to San Diego for refueling, the invasion fleet —with the bulk of its ships following in the wake of the slower units—steamed westward in the early morning hours of 15 October. For 10 days, over a 2200-mile course, the ponderous fleet swept steadily westward under constant submarine attack.

The maneuver at sea was rigidly controlled to provide the maximum in training for all units. The fleet schedule was so

U. S. Army Photograph

Troops disembark during the final training phase.

U. S. Army Photograph

Weirdly garbed members of underwater demolition teams—the famous Navy "frogmen"—contributed to the confusion of Aggressor troops.

arranged that major elements passed within a 50-mile radius of key points 12 hours apart, thus providing test areas in which roving Aggressor submarines could test their ability to stalk and kill. During the passage, the fleet's antisubmarine defenses received a full workout. Ships of both forces were technically sunk or seriously damaged, but in each instance they were out of action only one hour while damage control crews went through their paces. Meanwhile, officers on shipboard briefed their men in the invasion problem. This was supplemented by motion pictures, reading material and talks on the geography, population and resources of the Hawaiian Islands.

Aboard the flagship were fifteen representatives of newspaper, radio and news photo media, along with the Chief Umpire, his key staff officers and public information officers of the participating forces. Another 20 newsmen were flown to Hawaii in time to augment the corps of 50 island news correspondents who covered the invasion and maneuvers ashore.

Only when fleet units approached within 600 miles of Oahu did the maneuver action become "free." In advance of the landing, an Army-Navy reconnaissance party was put ashore at night from a troop-carrying submarine. Acting on the informa-

tion thus obtained, the flippered frogmen of naval underwater demolition teams prepared the beaches by marking or removing barriers and obstacles. An off-shore bombardment by naval batteries and carrier aircraft was simulated by smoke pots and detonations on shore. Fleet carrier planes were met over Oahu by Navy, Marine, and Hawaii National Guard planes of the Aggressor Force. Finally, at 1000 on 25 October, the fleet began debarking troops onto Oahu shores.

The basic plan called for a three-pronged landing on Yellow, Green and Blue beaches (south to north) in the Waianae-Pokai Bay area on the western shore of Oahu. According to this plan, the Western Task Force, by spearheading directly inland and securing Kole Kole pass, could make it impossible for the Aggressor Force to pour reinforcements on the beachhead area from Schofield Barracks. Thus, the main invasion effort could swing south to break out around Barber's Point and spill over the Ewa plain toward Pearl Harbor. The landings were scheduled to take 72 hours to roll over the three beaches, with on-call waves of troops and vital supplies destined to hit the center over Green beach. The choice of the landing area was largely determined by prevailing property restrictions; as a result, the landing was directed at an area which probably would have received nothing more than a diversionary attack in a wartime situation.

The normal pell-mell activity that accompanies any amphibious invasion was evident that windy October morning on Pokai Bay. Soon, however, the elements put the invasion to a real and unexpected test. The backwash of a storm piled an intermittent seven-foot surf onto Yellow beach on the south, where the shore party was to land and begin the supply build-up. The same was true of Blue beach on the north over which the 3d Battalion of the Ninth Infantry Regiment was to land and drive to secure that flank.

Within a few minutes after the first handful of troops broke through the crashing surf on Yellow and Blue beaches, landing craft were beached on the sand and were being pounded by the surf. Vehicles were swamped. Men in the landing parties were thrown into the water and against the rough coral. Immediately the plan was changed. All landings were now directed over the central Green beach where, on a strip of land several hundred yards wide, troops and supplies began pouring ashore at full capacity. Teams of soldiers and sailors sweated to pull the jeeps and artillery pieces out of the cling-

U. S. Army Photograph

High surf made beach landings hazardous.

ing sand, while tanks wallowed ashore and bulldozers chewed at the dune line, clearing the way for the matting that would allow rapid unloading of LSTs and LSUs.

Despite this change in plan, the landing phase of the operation was carried off within only 48 hours—including the logistical build-up of the required five days of supplies on the beachhead. Twenty-four hours ahead of schedule, all supplies and equipment were ashore, segregated and stored in dumps with stock cards available. The ammunition was piled in dumps and segregated by lot numbers.

Throughout, the transfer of command authority was handled in clear-cut fashion. Admiral Rodgers, who had commanded the invasion force during the oversea movement, had passed the command to Rear Admiral Peter K. Fischler, Joint Amphibious Task Force Commander, when the fleet reached the off-shore transport area. With the conclusion of the landing phase, General Collins of the 2d Infantry Division assumed command of the troops ashore.

On the logistics side, the demarkation line was likewise clearly drawn. Navy beach and Army shore parties worked together in complete harmony. The Navy beach party transported the supplies from the ships to the dune line. At that

point, the Army shore party took over, storing the supplies in dumps or starting them forward to the points of need. Assaulting regiments and battalions requiring particular items of equipment received quick delivery from the Navy beach and Army shore parties shortly after their messages were relayed to the control ship, the *USS Mt. McKinley*.

The Marines brought into play their newly developed Air and Naval Gunfire Liaison Company (ANGLICO). Maintaining radio contact with the task force command, this unit acted as liaison for naval gunfire support and tactical air control, pinpointing targets for bombardment during the early landing operations.

Aggressor, for its part, was quick to react. Troops on the beach were showered with propaganda leaflets dropped by plane. From well-concealed positions in the interior came the roar of sonic devices and the blare of amplifiers calling on the invaders to surrender.

With the conclusion of the landing phase, ninety per cent of the training objective, as defined by the Maneuver Commander, had been accomplished. Success of the invasion effort was assured when, on the first night ashore, troops of the

U. S. Army Photograph

An Aggressor patrol scans a possible landing place for the invading forces.

Western Task Force captured Kole Kole pass in the Waianae range. This effectively bottled up the Aggressor Force, preventing its resupply. The deputy maneuver commander ruled that the invaders, by fighting their way out of the beachhead pocket, had cleared the way for the recapture of Oahu.

Admittedly, the realism of the maneuver was hampered by rigid controls imposed to insure maximum training opportunities for all participants. Property restrictions on Oahu introduced further artificial controls. All this, however, was offset by the highly realistic situation created when the landing plans were changed to take advantage of the most tenable beach site.

In some instances, shortcomings in equipment and planning became evident. When dry cell batteries failed after being immersed in the high surf, communications among the assault units were endangered. More waterproofing materials, it was agreed, were needed to take care of all vehicles. A more ample supply of landing mats was required for use on soft beaches, particularly on the narrow Pokai Bay beach with its deep pitch and soft sand, where wheeled traffic bogged down for a time. Moreover, it was found that ramps on some of the landing craft failed to operate effectively.

One of the principal benefits of the exercise, however, is a greater appreciation of the extent of coordination and cooperation necessary among all services in an operation of this magnitude. Commanders of the participating forces concurred that the problems of command and control were further complicated by the geographical spread of the headquarters involved. This was especially apparent during the planning stages, when coordination among the Maneuver Commander's headquarters at Fort Winfield Scott, the 2d Infantry Division headquarters at Fort Lewis, the Aggressor staff at Honolulu, and the Western Task Force and First Task Fleet staffs at San Diego was carried out.

By smooth functioning and harmonious cooperation, Army, Navy and Marine Corps personnel on the Miki joint staffs demonstrated the realities of unification in the field. Mutual respect was engendered among the participating services, and with it, greater efficiency and prospects for still greater security for the Nation. In short, Miki—the Hawaiian word for "readiness"—lived up to its name and to the exercise motto, *E Hele Kaua,* which means "Let's go!"

REPORT ON I & E

Findings and Recommendations of the Weil Committee

AN information and education program for members of the Armed Forces is essential to the welfare of our Armed Forces and to the national security. It is clear that such a program is vital to the development of civilian confidence in and support for the Armed Forces. In addition, the preponderance of testimony from our great combat leaders holds that an information and education program is essential to the development of proper battle discipline.

Information and Education has been officially recognized within the three services and within the Office of the Secretary of Defense. Provision has been made for a comprehensive program based on the premise that a soldier, seaman or airman can serve his country with maximum effectiveness only if he understands his responsibilities as a citizen and as an individual member of the Armed Forces, if he appreciates the importance of his personal contribution to the national security, if he is provided with opportunities for education, and if he is kept informed on the major problems and purposes of his country . . .

[The Committee's findings follow:]

(1) The educational activities provided by the Department of Defense for men and women in uniform are comprehensive and of high quality, but there is still opportunity and need for commanding officers to encourage more widespread participation in these educational activities.

(2) In general, the whole I&E program does not operate as efficiently in the field as should be expected and as is desired. The effectiveness of the program varies among the services. The most effective program is being carried out within the Department of the Army.

(3) Lack of command support, especially at the operating level, is the most serious handicap to successful implementation of the I&E program. This lack of command support is accentuated by neglect of the I&E program in officer training schools and staff colleges and by a lack of specific directives for the

Background of the Report

The President's Committee on Religion and Welfare in the Armed Forces (the Weil Committee) was created by Executive Order in October 1948 as part of the Government's announced policy "to encourage and promote the religious, moral and recreational welfare and character guidance of persons in the Armed Forces and thereby to enhance the military preparedness and security of the Nation."

In considering the means of accomplishing this policy, the Committee was directed to place maximum reliance upon existing facilities and services. Besides conferring with and advising the Secretary of Defense and the Secretaries of the Army, the Navy, and the Air Force, the Committee has undertaken several studies and appraisals of activities and conditions affecting service morale. Such a Weil Committee study on community services—"Community Responsibility to Our Peacetime Servicemen and Women"—was published in March 1949. This was followed by a survey and recommendations on "The Serious Shortage of Family Housing for Military Personnel."

Probing still another area of service-wide interest, the Committee has currently completed an evaluation of the Information and Education program in the Armed Forces. Recognizing that the full meaning of the I&E program can be appreciated only in relation to its impact on the man in the field, members of the Committee and staff during the past several months visited 22 military installations in the United States and many others in Europe and the Far East, gathering data first-hand. In addition, the Committee consulted with civilian experts and interviewed authorities charged with responsibility for the program in each Department.

The findings and recommendations summarized here are from an extensively documented report on the Information and Education program in the Armed Forces submitted to the President with the unanimous approval of the Committee.

Comprising nine eminent leaders in religious and social service organizations, the President's Committee on Religion and Welfare in the Armed Forces consists of the following: Mr. Frank L. Weil (Chairman), President, National Social Welfare Assembly and President, National Jewish Welfare Board; Miss Dorothy Enderis, Milwaukee educator; Mr. Truman K. Gibson, Jr., Chicago attorney; Dr. Lindsley F. Kimball, Vice President, Rockefeller Foundation and General Education Board; Mr. Mark A. McCloskey, Director, Division of Community Education, New York City Board of Education; Mr. Basil O'Connor, President, National Foundation for Infantile Paralysis; Dr. Daniel A. Poling, Editor, the *Christian Herald;* Mrs. Ferdinand Powell, Sr., civic leader, Johnson City, Tenn.; and The Very Reverend Edmund A. Walsh, Vice President, Georgetown University.

implementation of the program in the Navy and to some extent in the Air Force.

(4) There is a serious shortage of qualified, trained personnel to administer and implement the I&E program.

(5) Although the extent of informational activities within the Department of Defense is noteworthy, there is serious controversy about the necessity for a compulsory Information Hour, and there are some defects in its operation.

Recommendations

General Principles: The Armed Forces Information and Education program is essential to the national security and should be considered a basic and integral part of military training.

Our democratic ideals are common to soldier, seaman and airman. Therefore, there should be a common understanding among the three services in the development and implementation of the Information and Education program.

Because the Information and Education program is basic to military training, it should be essential for all commanders in each of the three services to provide an extensive Information and Education program for their officers and enlisted men.

Command Support: Information and education is a fundamental responsibility of all commanders. Therefore, commanding officers should be required to take an active part in the I&E program. Implementation of the I&E program should be a matter for investigation by inspecting officers.

The Information and Education program is a tool of military leadership and an effective technique in the development of leadership. Therefore, appreciation and utilization of the I&E program should be considered as one of the criteria in rating officers and noncommissioned officers on leadership qualities.

The basic principles of the I&E program and the necessary instructions for its implementation should be set forth explicitly in official directives by each Department. Instruction in I&E policies, programs and techniques should be included in the training of all officers, not only in the basic officer training schools, but also in all advanced military schools.

Commanders should provide the necessary personnel, funds and time for effective implementation of the I&E program. This support is especially necessary not only because these factors are important by themselves to the success of the program, but also because they will indicate to subordinates the degree of importance attached to the program by those in command.

Trained Personnel: Properly qualified personnel are essential to the success of the Information and Education program. To attract such personnel to a career in I&E, a suitable career field should be established in each service for all information and education specialists with opportunities for advancement in appropriate grades and ratings in tables of organization.

Officers and enlisted personnel often are interested in Information and Education work but do not wish to make it a career. These men should be encouraged to undertake I&E responsibilities, as a collateral duty or full time, with the assurance that they can normally expect to resume their permanent career after a stated period. On the other hand, personnel whose talents and inclinations are particularly suited to an I&E career should be allowed to continue their I&E duties without respect to rotation policies until such a time as there is no longer a serious shortage of qualified personnel.

Facilities for training personnel are important. The Armed Forces Information School now conducted at Carlisle Barracks should be continued, and we recommend that the course for I&E officers be maintained at not less than 14 weeks and for I&E noncommissioned officers at not less than six weeks. Each service should fill its quotas with interested personnel who expect to assume I&E duties upon graduation. The Armed Forces Information School cannot meet the entire need, however, and training of information specialists should be expanded by the establishment of local training schools in major Army, Air Force and Navy commands.

The United States Armed Forces Institute Conference should be continued, and there should be an increased use at all levels of inter- and intra-service conferences to exchange ideas and techniques in the I&E program.

The Information Program: Although there is a vast amount of information available to service personnel through normal public channels and through such specialized Armed Forces media as service newspapers, films, maps, radio programs and periodicals, it is important that service personnel be aided in their acquisition and understanding of pertinent facts through the medium of weekly information and discussion hours. It is essential to the national security that our service personnel have knowledge and information, but such knowledge and such information may be meaningless unless they are related to the ideals and principles by which we live and for which we may be forced to fight. Democracy and the democratic way of life

remain but philosophies until they are put into practice by the individual in his own local environment.

It is, therefore, essential, in the unanimous opinion of the Committee, that every man in uniform be given an opportunity, as a serviceman in the cause of democracy, to benefit from the face-to-face give and take of open discussion in the regular weekly Information Hour. We therefore recommend that, subject to the exigencies of military necessity, a weekly Information Hour be made compulsory as fast and as extensively as practical at each level within each service. This should be an immediate objective that will be put into effect in all services as rapidly as possible. In the Army, where the compulsory Information Hour is now the rule, steps should be taken to strengthen the program and make these groups more meaningful. In the Air Force, where most major commands have a compulsory Information Hour, steps should be taken to make more effective use of small discussion groups during the Hour. In the Navy, where only a few voluntary discussion groups have been tried, steps should be taken to make information hours a more basic part of Navy training as quickly as possible.

Interesting and stimulating subjects are essential to successful conduct of the Information Hour. There should be greater experimentation in methods of presentation for the various types of subjects. An advisory committee of civilian information experts would be helpful in the preparation of subject material.

Adequate leadership is essential to good group discussions. Trained discussion leaders should be provided, briefing sessions improved, and more time devoted to command supervision of the Information Hour.

Group discussions are most effective in small groups and commanding officers should limit the size of discussion groups, preferably to no more than 30, which again emphasizes the need for competent leaders. As far as possible, discussions should be held in a comfortable setting with an atmosphere of informality.

There should be more centralized and expert preparation of training aids for the Information Hour. Films, transcriptions and posters should be related to subjects prepared for discussion. Such technical helps, however, should never be considered a substitute for competent and interested leadership.

Education and training in citizenship is a constant responsibility resting on all commanding officers. Much has been ac-

complished by means of special citizenship courses for recruits, but the I&E program and I&E techniques should be constantly used in all three services to foster better understanding of the responsibilities and obligations that derive from the rights of United States citizenship.

The Education Program: As the principal nonmilitary educational institution of the Armed Forces, the United States Armed Forces Institute rightfully occupies an important place in the general training program of the Department of Defense. The expanding interest of servicemen in the wide variety of high quality educational opportunities provided through USAFI facilities is matched by widespread civilian acceptance of USAFI educational procedures. It is essential, therefore, that USAFI receive adequate support based upon its direct effect on training in general and on the necessity that it maintain its educational standards in accordance with the requirements of civilian education.

While there are many opportunities for education in courses on the high school level, opportunities for college-level education can best be increased by cooperation with extension divisions of civilian institutions. A uniform policy should be followed in developing criteria for the payment of tuition at these institutions and there is need for greater coordination between the services and civilian institutions. Commanding officers should be alert to the possibilities for extending educational opportunities by cooperation with civilian educators in the provision of organized off-duty classes.

In the field of correspondence education, both the United States Armed Forces Institute and the Marine Corps Institute have made great contributions. The existence of two institutions having similar functions appears to be a duplication of effort and a limiting factor to the available educational opportunities. There are definite advantages accruing to the Marine Corps by virtue of the existence of the Marine Corps Institute, but, under the present arrangement, in some instances there is a limitation to the spread of opportunities available to individual Marines. We recommend that educational opportunities for Marines should be made equal to those available to men in other services by opening up all USAFI courses to Marines and informing them of the opportunities, regardless of whether or not there is a parallel MCI course in existence.

Commanding officers should extend educational opportunities by establishing sound and available procedures for educational

advisement, both prior to and after enrollment. Educational facilities on military installations should be centrally located and educational opportunities should be vigorously promoted. Coordination of educational achievements with opportunities for promotion and command recognition of successful completion of a course of study will encourage greater participation in the education program.

These are our recommendations for the conduct of the Armed Forces Information and Education program. They derive their importance from the great significance of that program to the national security. The Information phase of that program is essential to our military commanders in training informed fighting forces who understand the obligations of American citizenship, and who, therefore, are better equipped to serve the Nation. The Education phase of that program is essential to our military commanders in training intelligent and competent forces who are better able to accomplish their assigned missions. Both phases constitute a far-reaching and comprehensive program that is basic to an effective, modern military establishment.

The American people may take particular pride in their Department of Defense for the progress being made in its informational and educational activities. However, the imperfections in the operation of the I&E program represent a challenge to the Department of Defense no less serious than the challenge presented to the whole American people by the current world conflict in the field of ideas.

Tanks, ships, planes and guns become outmoded, but ideas are the perpetual munitions of victory. It is good and necessary, then, that we cherish the ideas that have made us a great Nation and that we make it possible for those who enter our military service to understand those ideas and to appreciate their enduring vitality.

DISCIPLINE THROUGH UNDERSTANDING

Discipline in the Army today cannot be founded on the ancient shibboleth of "Theirs not to reason why, theirs but to do and die." American soldiers particularly must know the reason why and must be convinced of the importance of their individual tasks in the operation of a unit. Hence the importance of the individual is paramount, and respect for the rights of the individual is the keynote of American discipline and American leadership.

General J. Lawton Collins, Chief of Staff, United States Army

LIFE ON A SUBMARINE

By

COLONEL JOHN D. KENDERDINE

ON a submarine there is room for everything— except a mistake.

Probably in no other arm or service of the Defense Establishment do the lives of men depend so continuously on quick thinking, accuracy and exact timing. A carelessly opened valve, a miscalculation in navigation, a split second miss in coordination—and the lives of some 80 officers and men are in jeopardy. Escape in disaster is possible, it is true, and men are meticulously trained for it; but escape may mean coming to the surface only to be delivered into the hands of an enemy.

U. S. Navy Photograph
Facilities are compact.

Submariners (accent on the second syllable) are taught to rely on themselves and on each other. The team is everything; there can be no quick replacement, no relief. The ship and the men in it are on their own —often for months at a time. Such conditions require leadership of the highest caliber, and a crew of tough-minded, quick-thinking men.

Every instrument and device on a submarine—thousands of switches, gauges, lights, levers, telephones—is essential to operations. Each must be in perfect condition at all times

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COLONEL JOHN D. KENDERDINE, Inf-Res., is former Editor, ARMY INFORMATION DIGEST. *This article is based on a visit to the U. S. Naval Submarine Base, New London, Connecticut.*

and each must be in place. There are no spare inches of space on deck or bulkhead. The sub carries with her all her replacement parts, stowed away in nooks and crannies. The shower-bath rooms and even some of the bunks are piled high with rations when the full load of food is aboard. The crew literally eats its way through the ship until the surplus is used.

The only unused space in a submarine is between the hull and its covering superstructure. This light, free-flooding superstructure—enclosing the boat and welded to it in various places—allows space for pipes, exhaust and other devices. The further utilization of this space for the stowage of supplies and equipment is being studied as a means of giving the sub a wider range of action.

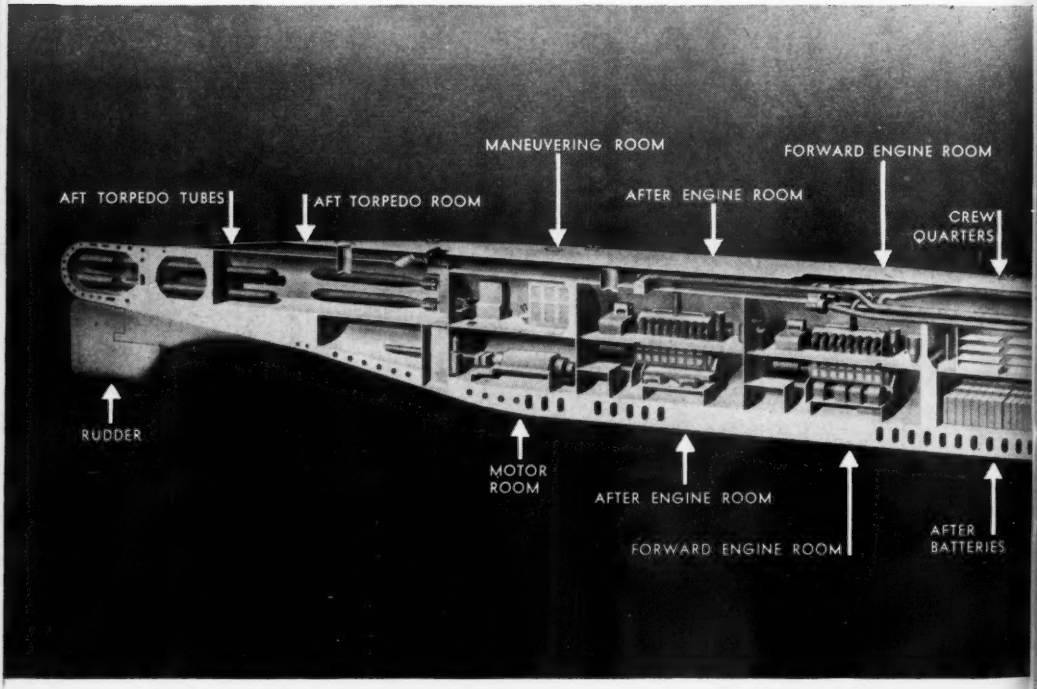
The newest type of submarine, of which the *Dogfish* (SS 350) is an example, has a streamlined superstructure; and impedimenta formerly on the deck have been removed, leaving only the conning tower and its enclosed parts projecting above the smooth deck. This streamlining, together with batteries of increased capacity, provides Greater Underwater Propulsive Power and gives the ship its familiar type-name of Guppy (the "y" added for euphony). A Guppy also has a stronger hull, permitting her to submerge to greater depths.

The other device that identifies the new type submarine is the snorkel. This ingenious apparatus, adapted from the Dutch *schnorkel,* and used by the Germans in World War II, enables the submarine to breathe while submerged. It has made the submarine, for the first time in history, truly a submersible ship. Heretofore, the submarine had to rise to the surface in order to breathe—through valves in her hull and her conning tower. At high speed she could submerge and run on batteries only for an hour or two; and at low speed for not more than a day—and then only under ideal conditions. Now when she has to have air, she need not rise to the surface but only to the extent necessary to expose her snorkel. Through the snorkel she can breathe in air for her engines and her ventilators. Thus, by exposing only her snorkel from time to time, the submarine can cruise submerged for indefinite periods, limited only by the supply of oil for her Diesel engines and food for her crew.

The snorkel is a basket-like affair, about the size of a coal scuttle. When not in use, it nests in the conning tower structure with valves closed. When raised and in use, the in-

take lies above the water, the exhaust just below. The intake is an automatically controlled valve which clamps shut when water touches it and which springs open only to admit air. Thus, the snorkel can ride the waves, right on the surface, so low that it makes a difficult pickup for enemy radar.

While it is extremely difficult for the enemy to detect the submarine at snorkel depth, the enemy is not invisible to her. She can raise either or both of her periscopes and scan the horizon; and she can identify surface ships and air objects through her radar antennae, which also are raised through the conning tower. But in doing so she pays a price; for periscope and radar antennae can be picked up by enemy radar, and their wake can be identified by enemy eyes. Safety for the submarine, therefore, lies in submersion; and is then only relative. For unless her engines are idling, the beat of her propellers can be picked up by enemy underwater sound devices. Complete concealment is possible only when submerged below that layer of water—from 100 to 200 feet—which, be-

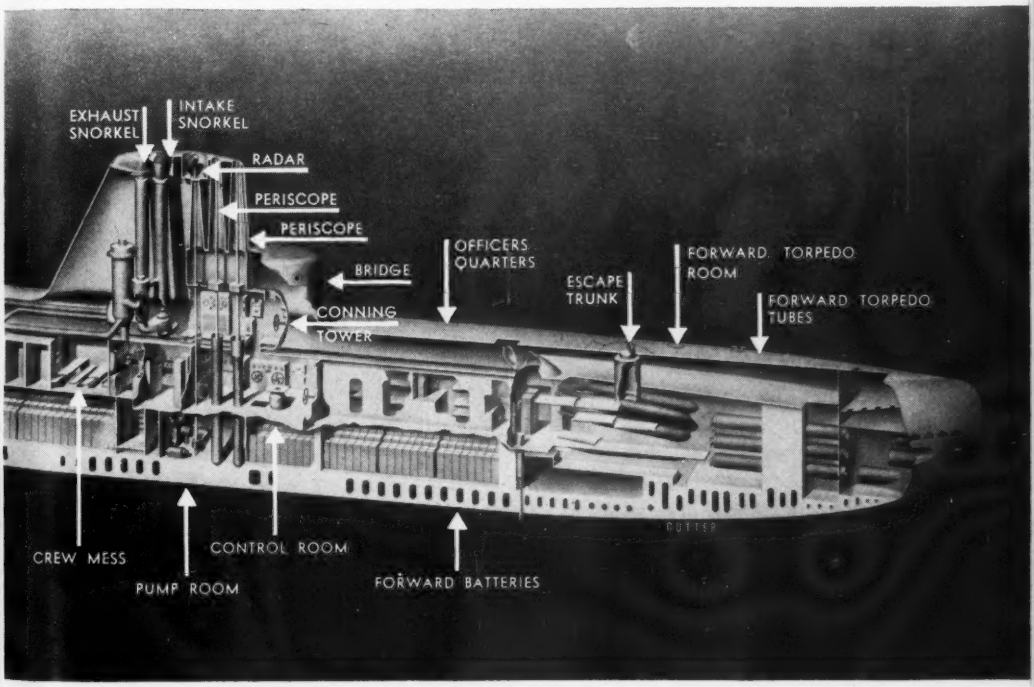


A SCHEMATIC DRAWING SHOWING THE COMPACTLY

cause of its steep thermal gradient, deflects sound. In such a position, she gains relative safety but loses her initiative.

It is such equations that give submarine tactics a cat-and-mouse aspect. In combat, hunter and hunted are quickly reversible roles, and the crew must be ready instantly to make the most of a moment's tactical advantage.

Submersion, however, with radar and periscope inactive, does not completely cut the submarine off from knowledge of what goes on about her. Having lost her sight, she still retains her hearing through two kinds of sonar (underwater sound) devices. One type, housed flush with her deck, is an oblong magnetic "ear" which picks up some sounds as far away as two or three miles. This device is so sensitive that it can pick up the movement of fish, or conversation among an enemy crew. The other sonar device rides astride the keel and consists of a bell-shaped object. It sends forth sound as well as receiving it. The emitted sound hits a distant object and "pings" back an echo. The loudness and bearing of the



ARRANGED INTERIOR OF A GUPPY TYPE SUBMARINE

James Cutter in Science Illustrated

ping tells where the object is, its range, its characteristics, its movement.

Sonar, again, is not an unmixed blessing; for the keel sonar's pinging system discloses the submarine's position to a possible enemy. How to send and receive sound under water—preferably voices, but at least code sounds—without disclosure to an enemy, is one of the knotty problems on which a staff of scientists is working day and night at the Navy's Underwater Sound Laboratory, in New London. The porpoise idea was discarded early in the war. An armchair inventor, it seems, seriously proposed that porpoises might be trained as are homing pigeons, making their way from ship to ship with "The Admiral presents his compliments." A moment's consideration was given, however—but only a moment—to the proposal that porpoises could be trained to swim above enemy submarines, disclosing their course to watchful airmen.

The *Dogfish*, typical of the guppy-type submarine, is as long as a football field—and as compact as a drug store bargain window. From bow to stern, she has eight double-tiered compartments. In emergency, any of the eight compartments can be isolated and flooding can be confined to the compartment that is hit.

Distributed throughout the sub are living quarters and facilities for the crew. Banked aft of the huge torpedo mechanisms are the three-tiered bunks of the men; and in the forward torpedo room is a toilet (the "head") and shower bath. The forward battery room contains the ward room (officers' mess) and officers' quarters. The captain has his own quarters, but other officers double up in cubicles—each provided with a small desk, book rack, two-tiered bunk, closet, chairs. Most of the crew have their quarters in the after battery room, near their galley (kitchen) and mess.

In order to dive, the ship's tanks must take on water. By this means, negative buoyancy is gained. Vents are opened, and the inflow of sea water is regulated—fore and aft, starboard and port—so as to give the diving ship the proper angle and the exact trim needed. Normally, diving is at a gentle angle—about five degrees—and the change in angle is scarcely noticeable. It is possible for the ship to dive at an angle of 30 degrees, but this is done only in extreme emergency—or in the movies or the lurid magazines. When submerged, some of the 3000 pounds of air pressure is bled through the ship to check the air-tightness of the vessel. If the slightest

leak is evident, the submarine is surfaced immediately. Various gauges indicate its trim, and how far down it is.

When surfaced, the captain, his executive or the deck officer is always on the bridge, above the conning tower. Before submerging, the officer and the deck watch leave the bridge which is then sea swept. The captain occupies the conning tower atop the main hull, while the deck officer goes below to the control room.

Speed and precision keynote the conning tower-control room team in action. Receiving terse reports from his crew, the captain concentrates on making the best approach on the enemy, maneuvering for position, then—by signal to the torpedo room—firing the torpedoes. With him, in the small space of the conning tower, are four officers (the torpedo computer officer and his assistant, the plotting officer and the executive officer) and four enlisted specialists (a radar operator, a sonar operator, a helmsman and a quartermaster—the latter to keep the log). When position, course and speed are just right in relation to the target, the captain signals "Fire."

U. S. Navy Photograph

A first class auxiliaryman mans the air banks. The telephone talker relays reports from the bridge on how high the sub is riding in the water.

Below in the control room, meanwhile, the deck officer has taken over his alternate duties as diving officer. He is responsible for the actual running of the ship, for insuring that valves and vents are closed, that the forward and stern planes (exterior) are set at the proper angle for the dive, that the ship is given the correct trim, that water and air are forced into tanks as needed, and that, in every minute detail, the ship is ready to perform as required. He insures that no lives are risked by the careless action of a crewman. As a further check, green lights on a panel board show that all proper valves and vents are closed before the ship dives. Only when all lights are green does the ship submerge.

In a typical training operation, the *Dogfish* ran at periscope depth. This gave her concealment—except for the underwater sound of her movements—but enabled the captain to raise the periscope, the radar antennae, and the snorkel, as needed, with only slight changes in depth. Up periscope for a quick swing around the horizon; down periscope and up radar for range estimation of the target ship, a mile off the starboard bow; then down radar—and pings from sonar, indicating the changing position of the target. As the target ship zig-zagged, the captain maneuvered the *Dogfish* in an attempt to catch his prey broadside. A target ship "zig" for six minutes, then "zag" for six minutes; they seemed to form a pattern. Then, as the order to fire was about to be given, the target ship changed her pattern. That meant more maneuvering, until the precise moment when, in the captain's judgment, he had the best probable target display. Then—"fire," and two forward torpedoes plunged on their way, set off by a signal from the conning tower to the torpedo room.

A torpedo weighs about 3000 pounds and is, in essence, a submarine in itself. It has fins and a tail assembly; and it has a gyro, which makes it run a straight course after it leaves the muzzle of the torpedo tube. As soon as the torpedo is fired, sea water rushes into the tube, thus compensating for the loss of weight caused by firing the torpedo. This water is then drained into huge tanks so that the submarine continues to retain her weight as she loses torpedoes.

The *Dogfish*, based at the New London Submarine Base, is part of the Submarine Force, Atlantic Fleet, of which Rear Admiral James Fife is Commander. The original cost of the *Dogfish*—built in 1945 at Groton, down the Thames river a short distance from the New London Submarine Base—was

U. S. Navy Photograph

Crew members bunk in close quarters with the sub's torpedoes.

$7,000,000; and it cost $2,000,000 more to guppy-ize her. That is a lot of responsibility for a captain, seven other officers and 71 men. The major expense is in her powerful batteries which alone cost $500,000. These batteries are charged by Diesel engines which in turn get their fuel from two large tanks amidships and their air (when submerged) from the snorkel. Batteries must be recharged at least once every two days. Hence the great operational advantage gained by the snorkel; for with this Dutchman's "snout" the ship can ride submerged for weeks, breathing under the waves.

Absence from a supply base is feasible for several months and may be extended if refueling by surfacing and tying up to a supply ship is practicable. Fresh water supply is no problem, since distillers can convert sea water into fresh water—not only for the batteries, but also for drinking, cooking, bathing and laundry. There is a washing machine aboard, and each submariner does his own clothes. The ship is allowed $1500 a month for operating supplies, including spare parts. Repair work is accomplished by a variety of maintenance tools on board, including a welding outfit and lathes.

Amazingly, life is comfortable on this capsule ship. It has to be; for there is no room in a submariner's life for the fussing and feuding that go with discomfort. Quarters are cramped, to be sure; but "cramped" is a relative word. A hospital corpsmen petty officer looks after the health of the crew. Food is excellent and special care is taken in its preparation and serving. Baking is done on board, except when in port, and fresh bread is a must. The ration allowance is $1.31 for each man—considerably higher than the allowance at the New London Base, because of the small number of men on a submarine. (The Navy ration allowance varies with the number of men to be fed). There are no restrictions on the consumption of food. At any time of day or night, a crewman may have a sandwich or a snack; and the traditional Navy coffee pot works 24 hours a day.

Recreation facilities are necessarily limited by space. Football and baseball may be engaged in when at the base, but there are only rare chances to participate in fleet competitions. At sea, recreation is in small groups or individually. When surfaced in a flat calm, the deck provides room for limited forms of "dungaree" sports; but most recreation is of the sitting variety—cribbage, chess, checkers, acey-deucey and the like. There is a library on board, under the supervision of the library officer. It is ample in size, and well-rounded in selection. Fifty dollars a month is allowed for recreation and library purchases although most books are obtained on a loan basis from the base library. The educational courses of the United States Armed Forces Institute are widely used.

Submarine duty is voluntary; only those who apply are considered, and they—officers and men—undergo a rigorous course of training at the U. S. Naval Submarine School in New London. Not only must a candidate meet rigid physical requirements and certain aptitude standards; he also must undergo the most painstaking examination of his emotional stability. He must tour one of the submarines tied up in the Thames river, and see what it means to live in close quarters with other men for weeks on end. He must accept the fact that the daily life of a submariner is an open book; there can be no temperament and no secrets—only a harmonious blending of personalities.

Submariners get extra pay; but pay is not offered as a compelling inducement for volunteering for submarine duty; it is, rather, a form of recognition by the Nation of one of the

most critical responsibilities in the Defense Establishment. Officers and enlisted men (there are no Waves in the submarine service) receive hazardous duty pay ranging from $150 to $30 a month, depending on grade.

Men volunteer for a variety of reasons—reasons which blend and overlap. Volunteers who have been caught by the glamorous tales of fighting and hardship, of escapes and rescues—and by home town headlines—find that glamour gives way to hard work and to desperately serious training and indoctrination. A practical inducement, in addition to better pay and better food, is that a submariner, except in time of war, is likely to be in his home port more often than the surface sailor. The normal training rotation is six weeks at sea—that is, in and out of port continuously—then two weeks on shore while the ship is being inspected and overhauled.

Submarines are for young men; the severe physical strain and the competition of a submarine career tend to eliminate oldsters, no matter how proficient they become. Among en-

U. S. Navy Photograph

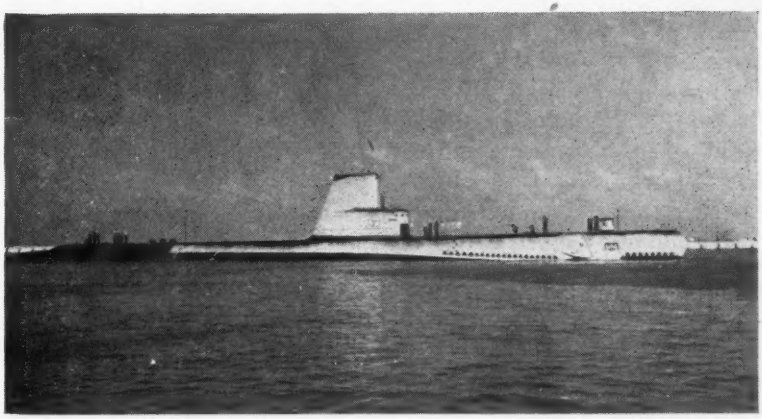
Inside the conning tower during an approach; the sound man and plotter aid the captain (at periscope) in computing the enemy's course and speed. Other personnel transmit orders to other parts of the boat.

listed men, few men over 30 years of age are accepted; and an age limit of 28 years usually applies to officers. Officers must have qualified as deck officers afloat before being accepted in submarines.

Training is long, hard and rigorous. For the officer, it consists of six months at the Submarine School at New London. A year at sea is followed by a practical qualifying test before a board of senior officers. Only then may the officer wear the coveted dolphin insignia and be assigned to submarine service as a career. The school course for enlisted men is only eight weeks, but it is rugged; the student not only must understand fully the overall operation of the submarine; he also is drilled in the precise functions that will be required of him when he is a responsible member of the fighting team. After nine months at sea, he is examined by the officers of his ship and may be recommended for permanent assignment and for promotion. The promotion rate is high, partly because of the age limits and partly because of the Navy's rotation policy.

Before being accepted as a student at the Submarine School, a candidate must pass an escape test. The escape tank is the failing point of a considerable proportion of the applicants. Prior to entering this huge cylindrical tower full of water, the applicant is placed in an air compression chamber to determine whether his ears and lungs can take the required pressure. If he can withstand 50 pounds pressure in the diving tank, he can withstand water pressure at 112 feet. But if he cannot take 50 pounds, he is eliminated from training, unless the defect can be remedied within a reasonable time.

While he is within the submarine, pressure on the lungs of a submariner is no problem, for the air pressure within the ship remains at atmospheric pressure; and water pressure is resisted by the hull. It is when he must escape while the ship is submerged that ability to withstand water pressure is the payoff. If an emergency strikes, men can escape from either of two hatches—one in the forward and one in the after torpedo room—which lie flush with the deck. To each of these hatches is attached a buoy which, when released, rises to the surface, trailing behind it a cable, attached to the ship. Up this the escaping men are guided to the surface, their grip on the line insuring that they do not rise too rapidly. To prepare for escape, four men enter a small escape chamber which nests below one of the hatches. The air pressure in the chamber is raised to a degree where it equals the out-



U. S. Navy Photograph

USS Clamagore, sister ship of the *Dogfish,* cruises on the surface. Snorkel, radar and persicope are retracted.

side water pressure. Once the pressure is equalized, a side door is opened; but the air pressure in a pocket above the door prevents the sea from rushing in. The men escape, one by one, up the guide line streamed from the hatch. The chamber is then closed and decompressed, to permit another group of four to enter; and the process is repeated until all are saved.

Men are trained (in the escape tank) to escape by the "free" method; that is, by controlling the amount of air in the lungs as they rise to the surface, releasing just enough to equalize the outside pressure. It is a tricky business, and only the skilled can do it. The novice, therefore, is trained through the use of the Momsen lung, invented by Rear Admiral C. B. Momsen. The lung, resembling somewhat the gas mask worn by an infantryman, is worn on the chest and has a nose clamp and mouthpiece. It automatically regulates the exhalation of air from the lungs. Every submariner is issued a Momsen lung, free ascent being only an emergency procedure.

Having passed the escape tank test, the prospective submariner is given a second physical test, by personnel of the Medical Research Laboratory, for visual acuity, for hearing, for night vision. He is given a general classification test, a test in reading and arithmetic, and preliminary tests to determine his emotionality and intelligence. Finally comes the psychological test—an interview and the filling in of several forms. This not only records his personal and family background,

but asks such searching multiple-choice questions as: "I seek (or avoid) excitement." "When excited, I feel weak (or strong)." "I wish I could get myself to take more chances; or I wish worrying wouldn't make me sick to my stomach." "I think I might like to watch a surgical operation; or, the sight of blood upsets me"—thirty-two multiple-choice questions in all.

With the personal inventory form and a personal history questionnaire before him, the medical officer talks with the prospect for a few minutes, putting him at ease and discussing his family background and education, his activities in school, his likes and dislikes, his ambitions. So skillful are the interviewers that they sense the adaptability of the man by his manner as much as by his responses, and rarely do they send into training a student who fails to fit into the team. They readily disclaim infallibility, however, and continually search for additional criteria for judging a prospective student.

Possibly an underlying reason for a submariner's *esprit* is his intense pride in belonging to a hard-hitting, fast-stepping team, a group of highly trained professionals. Furthermore, the crewmen form a small, closely knit group. That condition engenders the kind of intense loyalty that is more difficult to acquire on a large ship.

While submarining is a young man's business, youth alone is not enough. It takes an infinite capacity for hard work, a ready adaptability to group living, an unassailable sense of responsibility to one's job and to one's companions—a sense of duty that never flags, either under boredom or in the high pitch of undersea battle.

AID

ON MEN AND MACHINES

The Navy's basic responsibility is to play its part on the National Defense team by establishing, maintaining and defending our command of the seas and such collateral missions as may be assigned. Technology and science plus skilled craftsmen produce the ships, the planes and the submarines—but it is our educational system that must produce the personnel. These people must possess a high order of intelligence and the technical skill necessary to command and operate successfully these vessels and machines. No matter how great our technical knowledge, the man member of the man-machine team will ever remain the most important member of that team.

The Honorable Dan A. Kimball, Under Secretary of the Navy

EUROPE IS THEIR CLASSROOM

By

LIEUTENANT LESLIE R. BOEHM

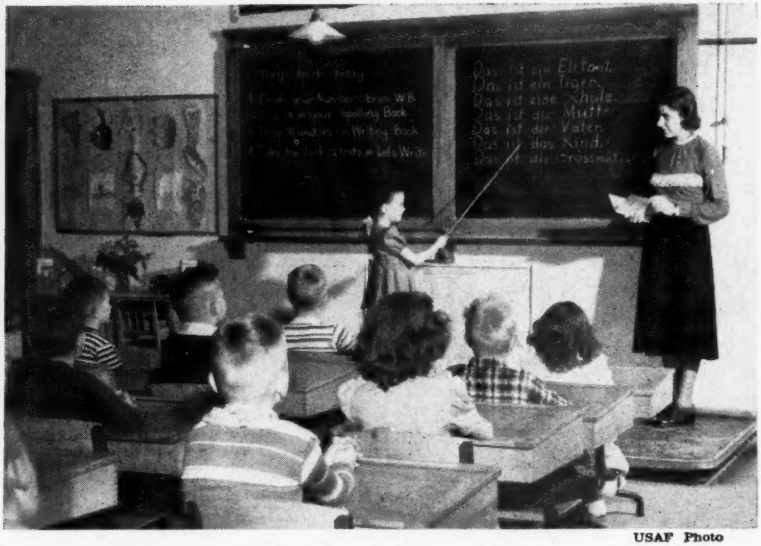
NESTLED comfortably in the Rhine River valley with the Taunus mountains forming a majestic backdrop, the Dependents' School in Wiesbaden, Germany, offers the children of American occupation personnel an education unique in scope. Taking advantage of the availability of German teachers, the school supplements normal academic subjects with German language instruction even in elementary grades. The children's education is broadened further by field trips to points rich in historical and legendary interest.

This American educational system 4000 miles from home combines the outstanding features of the democratic school system with the patterns and traditions of the United States military establishment.

Like all such schools operating wherever United States troops and their families are stationed, the Wiesbaden Dependents' School is accredited by the North Central Association of Colleges and Secondary Schools. The textbooks are standard texts approved by the United States Bureau of Education. In addition, the school has a varied selection of supplementary texts and library books.

In dependents' schools throughout the world, courses are uniformly arranged and parallel those of leading public school systems in the States. Thus, a student can transfer from one dependents' school to another or to a civilian public school without hardship. As an example, one Wiesbaden girl during the past five years has attended public school in Maryland, dependents' school in Okinawa, public schools in California and New York, and finally the Wiesbaden Dependents' School without encountering any scholastic difficulty.

FIRST LIEUTENANT LESLIE R. BOEHM, USAF, was formerly on the staff of the Public Information Section, Headquarters, United States Air Forces in Europe.



USAF Photo

Second graders in the Wiesbaden school attend a German language class.

Of the more than 4000 children attending dependents' schools in the European Command, 419 are currently enrolled at the Wiesbaden school. The teaching staff consists of 16 American and nine German instructors. This is an average of one teacher for every 17 students—a ratio much higher than that maintained in most Stateside schools. The Americans teach standard academic subjects while the Germans teach foreign languages and music.

The teaching of German in the elementary grades is a unique departure from the curricula of United States schools. Often the first- or second-grade pupil acquires a competence in the language that out-strips his elders. In many American homes, it is not unusual to have the school child act as interpreter when language difficulties arise. German is a popular choice of high school pupils, although they may take Latin or French. Its prime value, however, is that the child is able to carry on conversation with German children in his own age group. This leads to an exchange of ideas, games, customs—and eventually the development of understanding among peoples.

This reciprocity of languages and ideas also applies in the relationship between the dependents' school staff and teachers in the German educational system. Wiesbaden de-

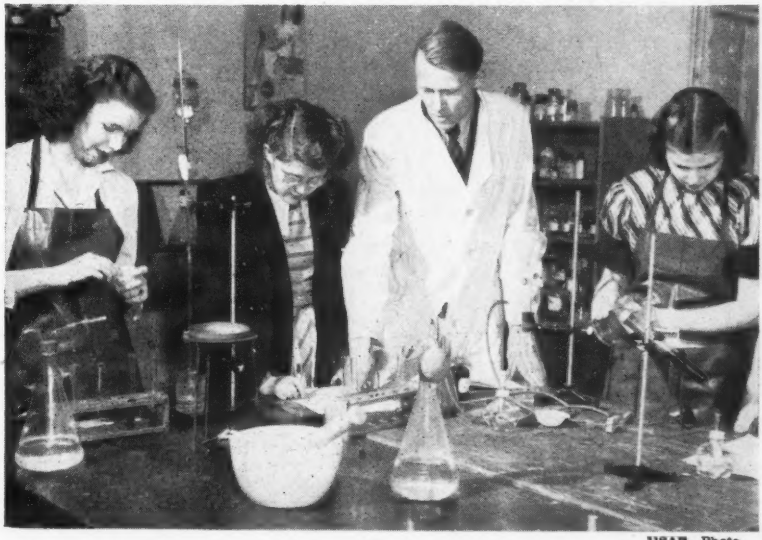
pendents' school instructors visit German schools and the teachers in the German schools often tour the dependents' system, surveying its methods of teaching and its educational philosophy.

An excellent medium of cultural exchange for high school pupils is afforded through the debating society. Teams from the dependents' school hold debates with German youth groups on topics of general interest. The debates are conducted alternately in English and German.

The educational process continues even when students accompany their parents on vacations. While children in the States are reading about points of historical and cultural importance, the Army and Air Force children of Wiesbaden are actually seeing these landmarks of history.

Supplementing family tours, all of the classes take regularly scheduled field trips. A group of students recently viewed the "Heidelberg Man," toured Kronburg Castle near Frankfurt and visited the art museum and cathedral at Mainz in the French Zone. A cultural broadening is also effected through the athletic program. The Wiesbaden "Warriors," for example, are treated to a tour of the nearby historic spots after each athletic contest played away from home.

The traditions and activities of the Wiesbaden students,



USAF Photo

American girls perform an experiment under the guidance of a German teacher.

despite their continental surroundings, are almost identical with those of their contemporaries in the States. The students publish a school paper, hold dances in the "Teen Town" club house and indulge in banana splits at the "Sugar Bowl." Instead of the standard parody of the Notre Dame *Victory March*, students sing a lilting melody that, upon closer inspection, turns out to be a parody of *Lili Marlene*. The Model A so prevalent at Stateside schools is not in evidence, but a 1932 vintage *Volkswagen* serves as the continental substitute.

In Wiesbaden and other dependents' schools, American boys and girls are receiving far more than basic academic instruction. They are acquiring a knowledge of languages, a familiarity with historical backgrounds, and a relationship with people of other countries that are the key to an ever broader cultural understanding.

USAF Photo

Wiesbaden students leave for a visit to an historical monument.

JUNIOR LEADERSHIP

FIELD MARSHAL THE VISCOUNT
MONTGOMERY OF ALAMEIN

SOLDIERS want to be able to recognize in their leader some quality which they themselves do not possess; that quality is "decision." The leader's power of decision results from his ability to remain imperturbable in the crisis. The leader's greatest asset is the ability to act normally in abnormal conditions, to continue to think rationally when his men have ceased to think, to be decisive in action when they are paralyzed with fear. There are many important qualities which a leader should possess, but they can never be a substitute for: (a) Decision in action; and (b) Calmness in crisis.

These are the two vital attributes of a leader, with which he will succeed and without which he will fail.

These two qualities exist in varying degree in every potential leader. But those men who possess them only to a limited extent can become adequate leaders *by training.* Some people say that good leaders are born such and cannot be made. I do not agree with this. I consider that, provided a man is efficient and has in him only a limited spark of leadership, that spark can be greatly developed by training; that man can well become a competent but not outstanding leader.

Regimental spirit and tradition can be a powerful factor in making for good morale, and must be constantly encouraged. But in the crisis of battle a man will not derive encouragement from the glories of the past; he will seek aid from his leaders and comrades of the present. Most men do not fight well because their ancestors fought well at the battle of Minden two centuries ago, but because their particular platoon or unit has good leaders, is well disciplined, and has developed the feelings of comradeship and self-respect among all ranks and on all levels. It is not devotion to some ancient regimental story that steels men in the crisis; it is devotion to the comrades who are with them and the leaders who are in front of them.

Extracted from a statement by Field Marshal the Viscount Montgomery of Alamein, GCB, DSO, former Chief of the Imperial General Staff, British Army, now chairman of the Commanders in Chief Committee of the Western European Union. Published in the "Canadian Army Journal." Reprinted with permission.

DIGEST OF SPEECHES

Extracts from speeches and public statements pertaining to the Defense Establishment

Secretary Matthews:

ELEMENTS OF NAVAL STRENGTH

Our Navy today is unquestionably superior to that of any other nation. It is undoubtedly greater in material units and striking power than all the other navies in the world combined. Such a statement of itself is not sufficient, however, to establish as a fact that the Navy we do have is all that it ought to be in the light of existing world conditions. The sufficiency of our Navy power depends on its adequacy in the event of war to carry out with satisfactory promptness the roles and missions assigned to it in the strategic plans for national defense. . . .

Measured by that test our Navy of today meets our requirements fairly well in most particulars. In ships we are well supplied. In aircraft carriers, though we could use more in the opinion of many of us, we are much stronger than all the rest of the world. In the Naval and Marine Air Force we have impressive peacetime equipment in spite of recognized shortages. In munitions our reserves meet the requirements. In weapons we are modernized and equipped in advance of other nations. In underwater war craft, unfortunately, we share the disadvantages that radical and rapid development in construction and improvement of submarines since World War II has produced. The Marines are the same potential "bad news" that they have always been to a prospective or actual enemy. We have abundant shore establishments in satisfactory physical condition to service the fleet with proper dispatch in peacetime and capable of adjustment to meet all foreseeable emergency necessities. In research and development we are striving, with success, to keep abreast of technological progress and apply the magic of our inventive genius to the improvement of the instrumentalities of scientific warfare.

Neither you nor I would contend that, in any of these areas of our Naval strength, improvements could not be made in our resources. We must admit frankly that to meet the demands of actual war substantial additions would be required in each category. In the absence of war or its foreseeable imminence, however, the Army, the Navy and the Air Force must respect the financial limitations of the national economy.

Economic strength is as essential to national security as military strength. It would be folly to build military might at the cost of national solvency. The staggering price of fighting a war subordinates to irrelevancy the expenditures made to prepare for war. The latter would be useless if they should cause the former to become impossible. That is why military budgets in peacetime dominate the thinking and planning of those responsible for the administration of the three Departments of the military establishment. As a result military planners never view their current status with definite contentment. In peacetime there is always too much lacking in what they know they should have and which they would have if the budget could stand the strain . . . .

Our Navy today meets our requirements in most particulars—fairly well in its material elements; splendidly in the standards, morale and number of its personnel. We have 507,400 individuals in uniform and 301,300 civilians comprising a total of 808,700 persons in Naval ranks. The civilians are Civil Service selections. They are average Americans performing faithfully the duties of their respective positions. Their man-hour production is satisfactory. The enlisted personnel reflect the same fine qualities that Naval character has always averaged. The officer ranks of the Navy today, as in the past, include a standard of manhood and a degree of patriotic fidelity to duty that is worthy of the most sublime loyalties our country has ever enjoyed.

Field Marshal Montgomery, in an address before the National Press Club in

Washington, enunciated a definition of leadership that to me has great significance. He defined a leader as "a person who imparts to others the truth which imbues in them a common purpose and who reflects in himself a character which inspires confidence."

Measured by those qualities the Navy is assured of leaders capable of directing its operations to a successful performance of the roles and missions that shall be entrusted to it in peace and in war. Its enlisted personnel are alert, physically fit and loyal. Its officers are seasoned by appropriate education and rugged experience. They know their duty. Their faith in the country, in their men and in themselves is unfaltering. Their segregated responsibilities will be met and discharged in typical Navy manner in every instance. Such facilities as are made available to them will be utilized to the utmost in pursuit of the prosaic missions of peacetime and the remorseless purposes of war.

From an address by The Honorable Francis P. Matthews, Secretary of the Navy before the Navy League of the United States, 30 November 1949

Lieutenant General Ridgway:

TRENDS IN MODERN WARFARE

Because it is recognized that the dominant factor in a future war would be air power, the Army plans to place increasing emphasis upon airborne, airtransportability and air-ground support techniques. For it is only by air that we can combine maximum mobility and maximum fire power. This of course will entail very close cooperation between Army troops and the Air Force and air elements of the Navy.

Movement by air, even in World War II, progressed to the point where the 82d Airborne Division shuttled back and forth across the Mediterranean by plane with remarkable ease. I am sure that if anyone had predicted this in 1940, he would have been considered an impractical dreamer.

We have a number of problems yet to solve in the added emphasis that we feel should be placed upon airborne and airtransportability methods. We need to increase the fire power and protection of paratroopers. They need antiaircraft in the early stages of their attack, greater artillery support and some kind of armor. And we need to perfect techniques of air-ground support. For in the initial stages of a landing, planes may very well play the part of artillery.

We have developed techniques of dropping light artillery to the point where 105s have gone into action twelve minutes after hitting the ground, but there are some pretty tough problems to solve with antiaircraft and armor. We need either lighter equipment or larger planes. Because of the heavy protection needed for tanks, and because of the delicate mechanisms of antiaircraft materiel, however, it looks right now as if the solution to these problems may consist of providing planes that can carry the equipment, rather than by reducing the weight of equipment.

Because we do not feel that airborne and airtransportable movements of troops will be feasible with units larger than corps, we are agreed that great mass movements of troops will still have to be made by sea transport, which means that our infantry and armored divisions will be as important as ever. It will also mean no diminution of the need for movement by sea, a role that the Navy performed so admirably during World War II along with its other functions.

As a matter of fact, the trends of modern war make it increasingly obvious that all three of our Armed Forces will have vital roles in a future war and that greater cooperation between the three services will become more and more essential.

From an address by Lieutenant General Matthew B. Ridgway Deputy Chief of Staff for Administration, United States Army before the 8th Infantry Division Association, 19 November 1949

DIGEST OF LEGISLATION

Prepared for The DIGEST by Joseph M. Howorth,
Legislative and Liaison Division, Department of the Army

¶*To Clarify the Active-Duty Status of Certain Army and Air Force Officers. (Public Law 342—81st Congress)*

Provides that any Army or Air Force officers recalled to active duty in the armed forces of the United States between 1 April 1944 and 1 May 1948 for medical observation or treatment, physical evaluation or retiring-board proceedings shall be deemed to have been on active duty for such periods and shall be entitled to credit such service performed prior to 1 May 1948 for all purposes. Further provides that any Army or Air Force officer who was admitted into a service hospital while on terminal leave prior to 1 October 1947, who reverted to inactive status prior to release from such hospitalization and who has not subsequently been retired or certified to the Veterans' Administration for retirement purposes, shall be deemed to have been on active duty until the date of release from such hospitalization. Within two years after passage of this Act such officers (or their estates) are authorized to apply for the pay and allowances to which they would have been entitled while hospitalized had their terminal leave not expired. Any monetary benefits received for disability or death prior to release from such hospitalization shall be deducted from the active-duty pay and allowances the officer would otherwise receive under the Act.

¶*Increased Compensation for Executive Heads. (Public Law 359—81st Congress)*

Establishes the following basic per annum rates of compensation: for the head of each Executive department, $22,500; the Secretary of Defense, $22,500; the Deputy Secretary of Defense, $20,000; the Secretaries of the Army, the Navy and the Air Force, $18,000. Also sets basic compensation for other heads and assistant heads of Executive departments and independent agencies.

¶*Guided-Missile Research Laboratory. (Public Law 386—81st Congress)*

Authorizes $1,900,000 for construction and equipment of a guided-missile research laboratory for the National Bureau of Standards, Department of Commerce.

¶*Construction of Alaska Communication System Installations. (Public Law 414—81st Congress)*

Authorizes the Secretary of the Army to construct certain temporary and permanent stations of the Alaska Communication System.

¶*To Provide for a Unitary Wind Tunnel Plan and an Air Engineering Development Center. (Public Law 415—81st Congress)*

Directs the National Advisory Committee for Aeronautics and the Secretary of Defense to develop a unitary plan for the construction of transsonic and supersonic wind-tunnel facilities for research in aeronautics, including the construction of facilities at educational institutions in the United States. Authorizes the Secretary of the Air Force to establish an Air Engineering Development Center and authorizes a $100,000,000 appropriation for this purpose.

¶*Construction at Military and Naval Installations. (Public Law 420—81st Congress)*

Provides construction authorization for specific projects required by the Department of Defense in Alaska and Okinawa. Authorizes an appropriation of $165,430,130 to carry out the provisions of the Act.

¶*Quartermaster Corps Research Laboratory. (Public Law 424—81st Congress)*

Authorizes an appropriation of $11,000,000 for construction of a research laboratory for the Quartermaster Corps, the location to be determined by the Secretary of Defense after recommendations by an impartial committee of experts.

¶*National Military Establishment Appropriation Act, 1950. (Public Law 434—81st Congress)*

For details of the provisions of this and other military appropriation Acts (Public Laws 358 and 430—81st Congress) see page 58, December 1949 ARMY INFORMATION DIGEST.

Vignettes of Military History

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LONG HAIR AND SHORT TEMPERS

On 30 April 1801, officers and men were informed that they must keep their hair short. The purpose was to promote cleanliness and economy and to produce a neater appearance. Many, however, took pride in their queues and strongly opposed every effort to do away with them. Officers at Fort Mifflin, Pennsylvania, obeyed "the imperious and arbitrary mandate," but with "chagrin and silent indignation." At Wilkinsonville, Georgia, resentment reached a high pitch. There Captain Russell Bissell became deeply embittered at the prospect of losing some of his hair. He wrote out his resignation, but before it could be accepted he had to settle his accounts with the paymaster, about 1800 miles away. Since he was without funds to make such a journey, he swallowed his pride and appeared as one of the "roundheads" when the commanding general later inspected the post.

Extracted from "The Beginning of the U. S. Army, 1783-1812"
by James Ripley Jacobs
Published by The Princeton University Press

The most cordial invitation to war that we could issue would be a policy of peace through weakness. One of the surest ways to drift into another conflict would be for us and other freedom-loving people of the world to water down our determination to be strong. War will come to us only by the aggression of another. We must demonstrate that we are able to resist such aggression.

The Honorable Gordon Gray
Secretary of the Army

U. S. Government Printing Office : 1950